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COMPUTERWORLD

Users cash in on Windows battle

Vendors offer bargains, services in effort to close corporate megadeals

BY ROSEMARY HAMILTON and CHRISTOPHER LINDQUIST
CW STAFF

Corporate users migrating to Windows desktops are reaping big benefits from the fierce battle currently being waged among software companies scrambling to win their business.

While users said they still select products based on quality and end-user requirements, companies are increasingly willing to throw in many extras — including less restrictive licensing policies, maintenance agreements and cut-rate prices — to gain share in the Microsoft Corp. Windows market.

In other words, the megadeal announced between Price Waterhouse and Borland International, Inc. late last month is just the tip of the iceberg [CW, July 27]. Andersen Consulting, for example, is finalizing a deal with Microsoft to provide application software for its 65,000 users worldwide, according to Rick Stuckey, partner in charge of Andersen's Knowledge Exchange Program.

Stuckey said the agreement is now going through its last legal hurdles, and it will designate Excel, Word and PowerPoint as standards for users within its consulting business and accounting group (see story page 6).

Andersen is not alone. Other corporate users said they either have recently closed large deals with the major personal computer software companies for Windows applications or are considering this route.

"Since Price Waterhouse struck its deal, we've had vendors come to us," said Jude Gartland, a senior vice president at Lehman Brothers. He said it would be "difficult" for his company to standardize on select applications, but he expects the "Price Waterhouse deal to be replicated and offered by Borland and others to companies with large" user populations.

Jeff Tarter, editor of "Softletter," an industry newsletter

Continued on page 6

EDS pulling plug on some CA software

Moves to replace products in 18 data centers

BY MARK HALPER
CW STAFF

DALLAS — Electronic Data Systems Corp. has begun dumping mainframe software from Computer Associates International, Inc. in favor of other brands as tensions between the two industry giants escalate.

The EDS action, which is under way at its 18 data centers, mirrors a reported move by Litton Computer Services in San Jose, Calif., to divest itself of CA software.

"We're looking to find products and vendors that we can rely on," an EDS spokesman said. "In some cases, because of disagreements we have with CA, we can't rely on them."

CA has moved aggressively of late to crack down on software use and license transferral in a world roiled by information systems consolidation and downsizing.

CA and EDS are suing each other in federal court. EDS filed a lawsuit on Jan. 9, alleging that CA refused to provide service and support and had raised license fees for spurious reasons. CA countered with a suit of its own later that month, alleging that EDS had combined and moved licenses among different processors to support several customers simultaneously — a violation of the license pact.

One step at a time

An EDS spokesman said his company is in various stages of replacing CA software used to process thousands of clients worldwide.

"We're trying to look at alternatives to the top dozen or so products of theirs," the spokesman said, adding that the outgo-

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IS Rx: HYPE OR HOPE?

Taming the health care cost monster

BY NELL MARGOLIS and ELLIS BOOKER
CW STAFF

Health care costs in the U.S. careened out of control long ago and kept on going: Currently pegged by some analysts at $2 billion a day, they are racing toward an estimated $1.6 trillion a year by 2000. Meanwhile, the frenzied search for a cure to the cancerous bill has landed doctors on the information systems doorstep.

A slew of experts, backed up by some promising pilot studies, said information technology can help put the brakes on escalating health care costs. But, they caution, it will not be easy, and it will not happen overnight.

Approximately $163 billion — roughly 20% of the country's projected 1992 annual $817 billion outlay on health care — is spent on administration, most of which is squandered, according to a recent study in *Consumer Reports*.

Information technology in general and telecommunications in particular seem to be apt

Continued on page 14

Healthy bill

Processing the nation's estimated 5 million health care claims a day can cost as much as $7.5 million

1991	1992
$1.45	$1.50*

Price per claim

The goal is to get the processing price down to $1.20 per claim. This could be done by standardizing on a single HCFA 1500 claim form, available in 50 versions today.

*highest it has ever been

Source: International Data Corp. CW Chart: Michael Siggins

Rising barometers

Overall user satisfaction with leading I-CASE tools is up from last year

See Buyers' Scorecard, page 81

Product	Score 1991	1992
Texas Instruments' IEF	74	76
CGI Systems' PacBase	71	76
Arthur Andersen's Foundation	65	68
KnowledgeWare's IEW/ADW	63	66
Average score	69	72

Maximum score: 100

No rush to toss aside proprietary minis

So far, troubled firms retain loyal customers, but most eyeing open options

BY MELINDA-CAROL BALLOU and KIM S. NASH
CW STAFF

While executives from Digital Equipment Corp., Data General Corp. and Wang Laboratories, Inc. labor to restructure — and, in some cases, save their financially troubled companies — many of their customers are quietly planning a move from proprietary minicomputers toward an open future.

That is the consensus from more than two dozen users of proprietary minicomputers from the three vendors interviewed last week. While some users plan to stick by their systems for a while, many are shifting to client/server systems built around Unix workstations or local-area networks, none of which bodes well for the mini-making trio.

DEC and DG, however, have some breathing room. A significant number of DEC and DG installed users said they are staying with the proprietary systems at least for the short term because of the companies' infusion of resources and energy into VAX and MV product lines. Long term, these same users may ultimately plan to move to more open environments.

Of the three, Wang appears to be on the shakiest ground, and DEC users are the most loyal.

DEC's Open VMS, its Alpha migration path and user invest-

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Some IS directors, such as Evan Wride at Nissan Motor Corp. USA, worry about IBM's cutbacks. Page 8.

The Confirm reservation alliance seems to be calling it quits. Page 20.

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"We are very anxious to get away from the issue of counting copies of programs."

RICK STUCKEY
ANDERSEN CONSULTING

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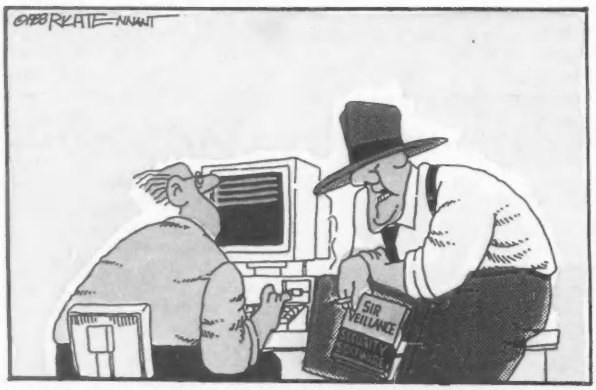


"THIS SECURITY PROGRAM WILL RESPOND TO THREE THINGS: AN INCORRECT ACCESS CODE, AN INAPPROPRIATE FILE REQUEST OR SOMETIMES A CRAZY HUNCH THAT MAYBE YOU'RE JUST ANOTHER SLIME BALL WITH MISAPPROPRIATION OF SECURED DATA ON HIS MIND."

EXECUTIVE BRIEFING

■ **Information technology could strip $30 billion a year** from U.S. health care costs. A spate of promising pilot projects shows the potential benefits. But don't expect the road to these vaunted savings to be easy, short or inexpensive. **Page 1.**

■ **The former Soviet Union may be the next bastion of software engineering talent,** with manpower 40% cheaper than in the U.S. What's needed, according to Lev Weinberg, Boris Yeltsin's enterprise adviser, are U.S. and other foreign partners who can share their sales and support expertise in return for access to coders skilled in C, C++ and assembler. **Page 89.**

■ **PC software vendors are wheeling and dealing** with large customers. While it may be too early to call this a price war, flexible terms and bargains are there for buyers willing to bargain. Andersen Consulting is signing a massive license to buy Microsoft products for 65,000 users. **Page 1.**

■ **EDS is divesting itself of Computer Associates' software** in the wake of a CA lawsuit over alleged EDS licensing violations. **Page 1.**

■ **Minimakers' troubles have users looking at their options,** with LANs and Unix systems ranking high on the list. But some will stay loyal if the vendor commits to the products. **Page 1.**

■ **Novell sets a September ship date** for its multiprotocol WAN router, though observers say the vendor's diluted offering could be a misdirected effort. **Page 4.** The choice between Windows and OS/2 as a client operating system under Novell's NetWare becomes more difficult with the improvements made to OS/2 in Release 2.0. **Page 55.**

■ **It's not uncommon for data centers to lose track** of purchased equipment. That's why about one quarter of the data centers in Fortune 500 companies have started using inventory management software to cut operations costs but the systems range in the tens of thousands of dollars. **Page 83.**

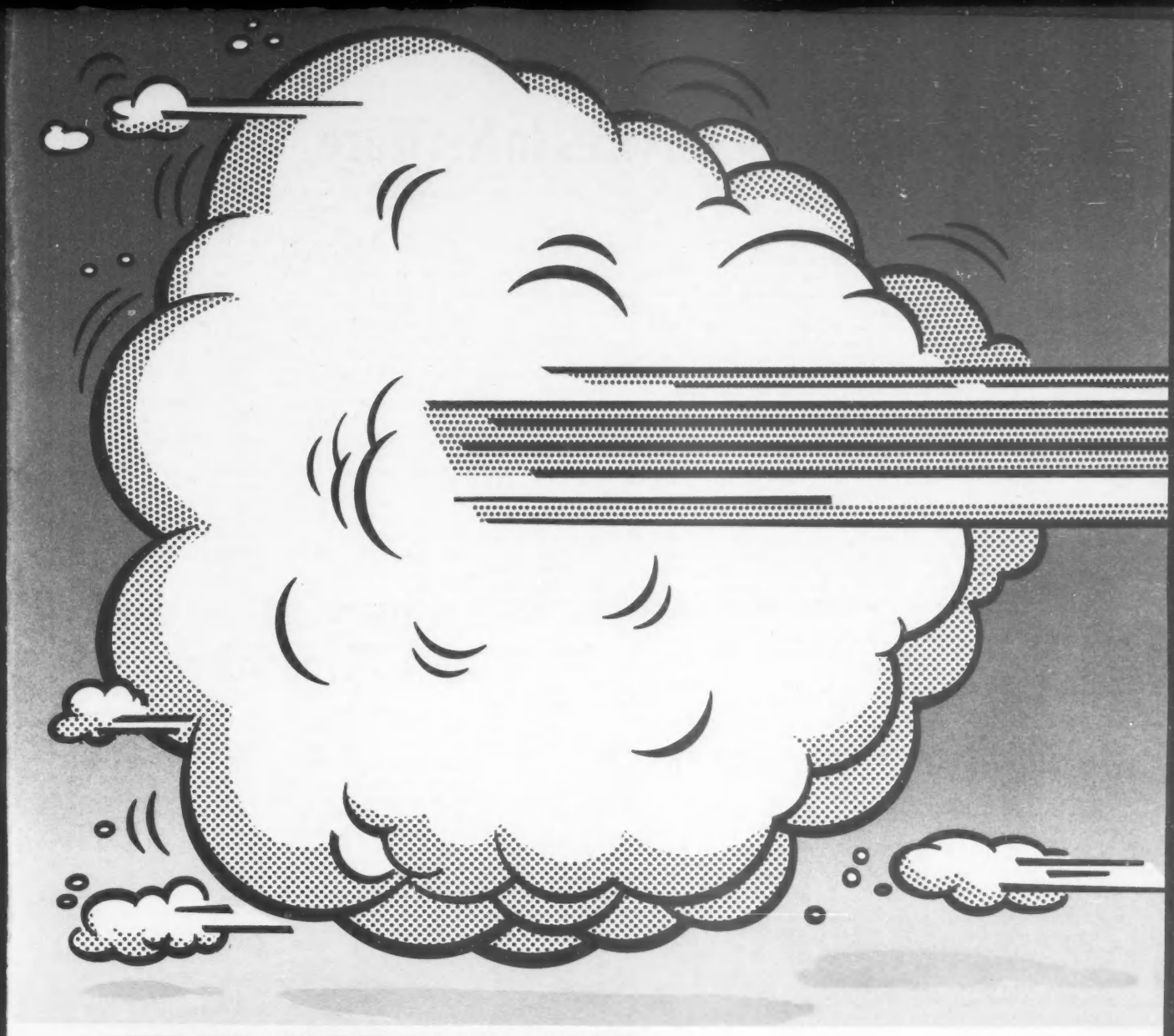
■ **Users have mixed reactions to IBM's aggressive cost-cutting plans.** Some are concerned that support and service could suffer, but others say IBM will be leaner and meaner. **Page 8.**

■ **The challenges presented by a mobile work force** have only begun to surface. Now that sales representatives and other workers are taking portables to heart, IS has to deal with giving them new types of access, such as full client/server capabilities. **Page 63.**

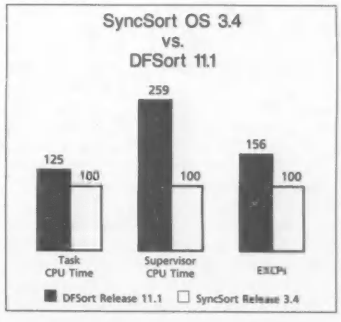
■ **Users can cut costs and improve service** by providing on-line access to reports that have traditionally been printed in and distributed by the data processing center. But there are roadblocks to be overcome. **Page 71.**

■ **Is early retirement the right choice for you?** Experts suggest you first weigh the current cost of living, outstanding obligations and the holes that inflation could make in a nest egg before making a decision. **Page 97.**

■ **On site this week:** "Never again," says the FAA after the 1991 AT&T network crash shut down New York airports. A backup communications system is now in place to keep air traffic control centers going in the event of another outage. **Page 63.** St. Agnes Medical Center relies on networked PCs to not only save costs but also make the whole operation run more efficiently by smoothing interdepartmental communication. **Page 58.** New York Hospital finds cash benefits in moving its data center offsite, a move made possible by a high-speed networking architecture. **Page 66.** A merger leaves PacifiCare Health Systems with some tough choices about when to use its own software and when to meld in the applications inherited from the acquired company. **Page 71.** Its program-related systems may be leading edge, but ABC Radio wants to do more with back-office or business-related computing. **Page 74.**



HERE'S WHERE WE LEAVE THE COMPETITION.



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Banyan to port net services to NetWare

BY MICHELE DOSTERT
CW STAFF

WESTBORO, Mass. — Banyan Systems, Inc. is seeking to expand its customer base by offering key services such as StreetTalk on platforms other than its proprietary Vines network operating system, starting with NetWare from archrival Novell, Inc.

Vines will also be ported to open Unix platforms, beginning with delivery of a version for The Santa Cruz Operation's (SCO) Unix next month.

Although the "foundation network services" to be offered on NetWare include security, management, messaging and the StreetTalk directory, which should have the most appeal to NetWare users, Banyan's announcement was a statement of direction only. The firm gave no specifics on the functionality, pricing or release dates for its new NetWare products, although it promised that the products would ship by year's end.

Hence, wary users, burned in the past by "statements of direction" sans delivery dates, are taking a wait-and-see attitude toward Banyan's new openness.

Also unclear is how helpful this unbundling will be to Banyan. Analysts differed over whether it will help win over NetWare users now eyeing promised directory services in the as-yet-unshipped NetWare 4.0. NetWare-only users have been pleading for a distributed directory service for years.

Word on the street

Banyan's StreetTalk directory services, a true enterprisewide, distributed name service, has long been the envy of many NetWare users. So Banyan is betting that NetWare users tired of waiting will investigate StreetTalk as an alternative, though some users may prefer to wait.

"I have 1,700 users. We already spend most of our time integrating our applications" and NetWare Loadable Modules, said Donald Sternfeld, director of information systems at law firm Morgan, Lewis & Bockius. "Adding Banyan services would mean adding complexity where I'm trying to simplify."

"What Banyan has inadvertently done is provided a migration path for its users to move to Novell. Lots of Banyan users would feel safer with Novell, but they may not want to leave StreetTalk. Now they can have the best of both worlds," said Glenn Marianko, a reseller at Glasgal Communications in Northvale, N.J.

The details that Banyan did provide also raised issues.

For example, Banyan indicated that the new products will be positioned as utilities for NetWare, rather than as a Vines/NetWare application interoperability product. This means customers in mixed environments wishing to share applications must still go through third-party gateways.

In addition, Banyan recently promised to enhance its messaging service to support industry-wide messaging application programming interfaces such as Vendor Independent Messaging, Microsoft Corp.'s Mail API and Novell's Message Handling Service. But the company has released no timetables for adding this support.

While Banyan sweats the details, users are looking for them. "It would be nice if we could use the same set of management and naming utilities on all our servers," said Dave DeVries, a senior LAN analyst at First Bank Systems, Inc. in Minneapolis, which has five NetWare servers in a mostly Banyan environment. There is some suspicion that Banyan's new product expansion strategy is linked to its upcoming public offering. Banyan has filed an initial public offering (IPO) registration statement with the Securities and Exchange Commission, although no date has been set for the actual offering. One banking source involved in the IPO said, "We weren't going to take them public with just an 8% market share for Vines; they had to leverage their strengths into additional products."

There are two possible target markets for Banyan services on NetWare: the small number of mixed Vines/NetWare environments, where analysts said they should do well, and the huge NetWare-only installed base, which will be a much harder nut for Banyan to crack.

Banyan's Vines for SCO is the first of what Banyan said will eventually be a family of Vines on as many as 14 different Unix platforms. The company is looking at moving Vines to reduced instruction set computing-based as well as Intel Corp.-based Unix platforms.

Novell to ship router next month

BY JOANIE M. WEXLER
CW STAFF

SAN JOSE, Calif. — Novell, Inc. last week attached a September ship date to its wide-area-oriented routing software. The imminent rollout reflects attempts to better position Novell as an enterprise networking provider, though observers said the firm could be misdirecting some of its energies in a market already brimming with established suppliers.

Given that Novell must first catch up to router leaders in functionality and performance areas before it will be taken seriously, "it would make sense for Novell to resell more heavy-duty products from other vendors than to waste time with a half-solution," said Richard Malone, principal at Vertical Systems, Inc., a consultancy in Dedham, Mass.

Novell's $995 MultiProtocol Router v2.0, when running with its $1,295 WAN Links v2.0 software, extends Novell capabilities to route Transmission Control Protocol/Internet Protocol (TCP/IP) and Apple Computer, Inc. AppleTalk to wide-area networks. It also adds Open Systems Interconnect protocol support to both single-site internetworks and WANs.

Previously, Novell routed only IPX over wide-area links but handled IPX, TCP/IP and AppleTalk between local-area networks within a site.

Novell's low-end routing software for personal computer platforms still lacks support for many protocols, bridging functions and many of the wide-area interfaces supported by other router makers, though it is in development. Novell, however, is up front about not expecting to be the foundation of customers' router infrastructures.

Rather, its routing efforts target sites looking to leverage their Novell NetWare expertise and PC server platforms and respond to customer demand to "simplify and enable IPX over larger networks in conjunction with other players," said Navindra Jain, vice president and general manager of Novell's Internetworking Products Division.

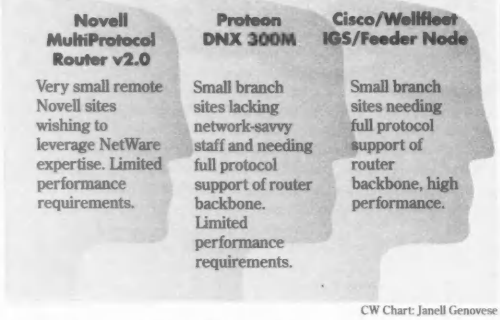
However, "If someone mixes and matches [different vendors'] routers in a very large network, they are guaranteed a complication in administration," said a senior LAN specialist at a large insurance pension management company and Novell shop who preferred not to be identified.

Other Novell shops, including Gulf Stream Aerospace Corp. in Savannah, Ga., and Physicians Mutual Insurance Co. in Omaha, discarded the Novell routing option for Proteon, Inc.'s recently announced low-end DNX 300M for performance reasons [CW, July 27].

Jain acknowledged that the trade-off posed by Novell's basing its routing on industry-standard hardware, which affords economies of scale and hardware recyclability, is performance vs. proprietary platforms.

Customer profiles

Low-end products from various internetworking vendors serve different customers



CW Chart: Janell Genovese

Industry cutting down on ATM roadblocks

BY JOANIE M. WEXLER
CW STAFF

Recent vendor pairings on Asynchronous Transfer Mode (ATM) technology show promise that the industry has learned from past mistakes to minimize technology-stalling red tape and political infighting within standards committees, analysts said.

Although they still have their prestandards development work to protect, vendors are becoming more pragmatic, observers agreed, and are picking up on the necessity of forming early-on interoperability and technology-exchange partnerships. The most recent is last week's announcement that chip maker National Semiconductor Corp. will license Adaptive Corp.'s ATM interface technology as the basis for chips that will figure in National's multimedia strategy.

The week before, Wellfleet Communications, Inc. and vendor Digital Link Corp. said they had agreed on a specification for how routers should hand off data frames to wide-area network gear.

"I have yet to see interoperable products above Layer 1 [physical connections] without these kinds of arrangements," said Richard Malone, a principal at Vertical Systems, Inc., a Dedham, Mass.-based consulting firm. "You're always going to have implementation differences" to resolve; otherwise, vendors would be left with no value to add, he said.

Adaptive, Wellfleet and Digital Link are all members of the ATM Forum, a vendor group following in the footsteps of the successful Frame Relay Forum for accelerating the implementation of high-speed networks. The group is making pioneering efforts to proliferate ATM — pegged as the favorite technology for handling the delay-sensitive, high-bandwidth demands of multimedia applications.

"Eventually, all camps will come down to one interface," said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C., consultancy. Vendors "are learning that if the other guy has something better, they better take it," he added.

Live and learn

One learning experience was a two-tiered holdup with Fiber Distributed Data Interface (FDDI) that could relegate it to a niche technology usurped by ATM. A year-long impasse over whether to create a standard to support FDDI's 100M bit/sec. speeds at lower costs over both unshielded and shielded twisted-pair or over shielded wiring only, followed by a split opinion on signal encoding methods, finally broke when the camps merged last month.

Prior to that, the original FDDI standard dragged on because of political differences about how much embedded management the FDDI chip sets should contain.

"Before the forums came along, the political arguments happened in formal standards committees that are more structured," noted Steve Taylor, president of Distributed Networking Associates, a consulting firm in Greensboro, N.C. "That made it much slower to get issues resolved."

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NEWS SHORTS

CSX commits to OS/2

CSX Corp. will standardize on IBM's OS/2 as its desktop operating system for what may eventually be as many as 20,000 users, according to George Sekely, president of CSX Technology, the transportation company's information services subsidiary. About 6,000 CSX users are currently using IBM Personal Computers, most of which are running MS-DOS. The remaining users will be upgraded from dumb terminals. Sekely said OS/2 was selected because it has "a more defined future" than MS-DOS.

Groupware '92 seeks definitions

Groupware '92, the first commercial workgroup computing conference, begins in San Jose, Calif., this week with the goal of providing a better definition of just what workgroup technology really is. The top PC software companies will be on hand to further establish themselves as groupware players, although no product announcements are planned. However, Lotus Development Corp. is scheduled to debate rival Borland International, Inc. on workgroup approaches.

Compaq to mount SystemPro push

Compaq Computer Corp. will try to preempt IBM's expected September PC announcements by making sweeping changes to its SystemPro line the week of Sept. 14, sources said. A Compaq executive said in June that the server division would make an announcement in the fall that will rival the giant desktop rollout last December. Enhancements are expected to include a dual-bus structure and price cuts that will bring the SystemPro/LT line to the $5,000 level.

IBM outlines new OS/2 promotions

With its original OS/2 2.0 pricing promotion ending last Friday, IBM has introduced a replacement program that still offers cut-rate deals off OS/2's $195 list price, although not as low as the first campaign. Previously, users could get price breaks only if they ordered directly from IBM. Now, users of Microsoft Corp.'s Windows can license OS/2 for $79, up from $49. DOS users can upgrade for $99, which is the same as in the first promotion. New users can license 2.0 for $149, up from $139. The promotion runs through the end of October.

DOS/Windows upgrades bundled

Microsoft will begin shipping a single-install version of its DOS 5.0 upgrade and Windows 3.1 for use on any computer currently running DOS. The $199.95 integrated package allows users to simultaneously upgrade DOS while installing or upgrading Windows using a single installation program.

Microsoft mouse suit escalates

Los Angeles-based Z-Nix Co. has filed a variety of claims, including an antitrust claim, against Microsoft in the latest legal battle over the firm's right to ship Windows with its line of mice. Z-Nix and Microsoft have been in a constant back-and-forth struggle since 1990, when Microsoft reportedly raised Z-Nix's royalty rate. The current suit seeks to invalidate Microsoft's copyright for Windows on the allegation that Microsoft used it illegally in restraint of trade.

Short takes

Microsoft announced the Microsoft Developer Network for developers writing programs for Windows and Windows New Technology. . . . **Borland** unveiled Version 3.1 of Brief, a popular programmer's editor for MS-DOS and OS/2. The list price is $249.95, but a special price of $99.95 will be available for a limited time. . . . **Stac Electronics**, a data compression software and hardware manufacturer in Carlsbad, Calif., has been hit with a class action suit alleging that it misled investors about its financial condition. . . . Object-oriented programming has reached **Cray Research, Inc.** supercomputers in the form of the Cray C++ Compiling Systems Version 1.0.

More news shorts on page 16

Microsoft wins license pact

Andersen and Microsoft forge multiyear, multiuser licensing deal

BY ROSEMARY HAMILTON
CW STAFF

CHICAGO — Andersen Consulting is about to make the recent ground-breaking personal computer software deal between Price Waterhouse and Borland International, Inc. look like kid stuff.

Andersen will soon finalize a several-year agreement with Microsoft Corp. that will provide licenses for at least three of its applications to as many as 65,000 users, according to Rick Stuckey, partner in charge of the Knowledge Exchange Program at Andersen.

In comparison, the Price Waterhouse deal covers four Borland products for 25,000 licenses each.

Stuckey said Andersen began working with Microsoft last year when it first selected Windows as a graphical user interface. At that time, there was little competition on the Windows application front, so Andersen forged ahead with Microsoft products.

One way: Our way

The deal establishes Microsoft's Excel, Word and PowerPoint as corporate standards for both Andersen and its accounting counterpart, Arthur Andersen & Co.

"We think it's the right thing to do, and we are very anxious to get away from the issue of counting copies of programs," Stuckey said.

The exact provisions of the contract are not yet finalized. Still to be hammered out are the legal criteria that will ensure that the deal accounts for "the evolution of the products," Stuckey said.

"We are still trying to set up the formula to get new features and so forth," he added.

He likened the spirit of the Microsoft pact to a similar large deal Andersen struck earlier this year with Lotus Development Corp. for its Notes workgroup platform.

Notes was licensed for 20,000 users, with the potential for thousands more, and "we never ever dealt with how many copies" of Notes the company would actually use, Stuckey said.

He said Andersen has closed a number of similar deals, adding that "we have others dragging on in negotiations."

Customers cash in on fierce Windows battle

CONTINUED FROM PAGE 1

published in Watertown, Mass., said he believes Microsoft set off this latest competition. "As soon as WordPerfect and Lotus got their Windows versions in the market, Microsoft saw its market share eroding," Tarter said. "Microsoft freaked out and cut prices and cut deals. Now the others are retaliating."

Indeed, vendors may have to do this to win sales as users become more aware of the deals.

"A couple more Price Waterhouses choosing Quattro Pro or 1-2-3 will send a very strong message to the vendors," said Joe King, vice president of information systems at Continental Life Insurance Co. "We're all out there looking every time we have to make a decision."

Software vendors contacted last week said they are increasing licensing options.

For example, Computer Associates International, Inc. confirmed that it will get into the application suite business. Sanjay Kumar, a senior vice president, said CA will announce Simply Business, a $550 suite with five software programs, including Accpac Simply Accounting, CA-Compete, CA-Textor and CA-Cricket Presents.

Stuckey said a key piece of the pending Microsoft agreement is that it "ignores numbers of copies" and allows users less-restricted access to software. The idea is to provide standard applications that are "available to everyone, regardless of how often they use it," he said.

Some users said such flexible licensing policies are badly needed and overdue.

"We could save head count by making it a much easier process to manage," said Cary Serif, manager of applied technology at Huntington Bancshares, Inc. in Columbus, Ohio.

The wheeling and dealing means the software firms will take some financial hits, but observers said the firms are willing to do so in exchange for longer term revenue streams as customers upgrade their products en masse.

"There's a transition [under way] now where they will have to get by with lower margins to be in a better position in the future," said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass.

The bargain rates are most obvious in the recent suite competition between Microsoft and Lotus Development Corp., which both offer a bundled set of four applications. At least one analyst said his firm purchases suites for about $300, which translates to about $75 per application.

Ironically, several users said that while licensing options and cheap prices are obviously important, the No. 1 factor when selecting a software vendor is still quality.

Unum Corp., an insurance firm in Portland, Maine, and a long-time 1-2-3 user, recently selected the Microsoft Office suite because of its superior features and integration, said John Roberts, vice president of corporate research and planning. Yet he took bids from a number of companies, and while he would not reveal exact price quotes, he said he was "shocked by the [low] prices."

A license to save

Users have a variety of licensing needs that ideally would be, or are being, met by software vendors

Cary Serif, *manager of applied technology at Huntington Bancshares:*

"This ploy, for lack of a better word, is a way to perpetuate their products, and it makes a lot of sense. They are making it as cheap as possible, and I think it's great."

Jude Gartland, *senior vice president at Lehman Brothers:*

"It is getting more and more complex for the administrator to live by the letter and spirit of the existing licenses. It looks like Borland is recognizing that and taking a step in the right direction."

Keith Sievers, *vice president of information processing and treasurer at Federal Kemper Insurance Co.:*

"We have quite a bit of networked software, and a lot of our software is covered under a network agreement. The cost of network licensing is usually less than buying, say, five shrink-wrapped copies."

CW Chart: Stephanie Faucher

WHAT HAVE BILL GATES, SCOTT MCNEALY, JOHN SCULLEY, JOHN YOUNG AND LARRY ELLISON AGREED TO COOPERATE ON?

Customers see IBM cutbacks as mixed bag

Users expect recent cuts will rejuvenate Big Blue but worry that service and support may suffer

BY JOHANNA AMBROSIO
CW STAFF

ARMONK, N.Y. — IBM users are reacting to last week's news that 18,000 employees will leave between now and the end of the year with some worries but also with high hopes of seeing a more responsive organization.

Most concerns centered around possible service and support reductions, as well as the chance that customers will have to begin paying for some services they have traditionally received for free, which will possibly impact their bottom lines.

"It used to be that IBM could bring people in and, for an account our size, a lot of that came free," said Al Smith, deputy director at Teale Data Center in Sacramento, Calif., the state's largest data center. "They're not going to have the ability to do that any longer."

Jay Stevens, a senior vice president at Dean Witter in New York, said users may soon have no choice but to pay for once-free services. "It cannot go both ways — the old way of doing business in a new competitive environment," he said.

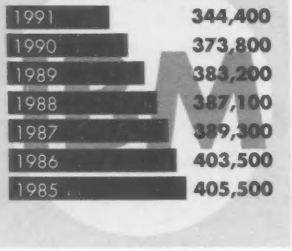
Another hot button was the possibility of lost access to experienced account representatives, should they be among those opting for early retirement.

"The problem is that there is no guarantee that the people left at IBM are the very best IBM has," said Sheri Anderson, a senior vice president at Charles Schwab & Co. in San Francisco. "It's humane to let employees choose, but it's not necessarily best for the company."

One information systems specialist at a state agency, who said two of his account reps are leaving, agreed. "You come to depend on these people; you know what they can do for you, and you don't see them anymore," he said. Instead, "you get some new kids, full of piss and vinegar, but they don't know anything."

On good terms

A considerable number of IBM employees have taken advantage of its voluntary incentive programs



Source: IBM CW Chart: Janell Genovese

Not to worry

But not everyone is worried. Some customers said the staffing reductions — attributed to IBM's latest crack at a voluntary retirement program — might work to re-energize the firm.

"The people here in the central New Jersey office seem confused but invigorated," said Paul Maszczak, director of data processing operations at C. R. Bard, Inc. in Murray Hill, N.J. "This brings a new awareness of the competitive marketplace."

Frank Metz, IBM's chief financial officer, said at an analyst's meeting in New York last week that the company will save $900 million annually because of the reduction, which will total 32,000 people by year's end. Of that total, some 14,000 have already left, with the remaining 18,000 to do so by Dec. 31.

By then, Metz said, IBM's total employee count will be close to 300,000, compared with 344,400 at the end of 1991 and peak employment in 1986 of 403,500.

Schwab's Anderson *expresses concern that those departing may include top talent*

Some users said they have noticed changes at IBM, citing its attempts to reorganize into smaller business units and the loss of 14,000 people so far this year.

Overall, users' reactions to the IBM reductions seemed tied mostly to the status of their account teams. Evan Wride, director of IS at Nissan Motor Corp. USA in Gardena, Calif., said, "The old-timers who are leaving knew who to go to. They had the contacts within IBM."

Wride, whose account representative is among those taking the early-out plan, suggested that "IBM find a way to make it easier for the account reps to bring together the experts they need."

Many users have noticed little change. "The only real impact we've seen is that sales and systems engineering comes out of Philadelphia instead of Wilmington," said John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Newark, Del.

Jim Oleksiw, telecommunications director at The Travelers Corp. in Hartford, Conn., said, "I haven't seen the service change dramatically over the past year." Still, he said he is "concerned. For guys like me in operations, with that need to get day-to-day problems fixed, there just may not be as many management people to talk to."

Senior editor Elisabeth Horwitt, senior West Coast editor Jean S. Bozman and Mid-Atlantic correspondent Thomas Hoffman contributed to this story.

IBM execs to recommend PC spin-off

BY MICHAEL FITZGERALD
and ROSEMARY HAMILTON
CW STAFF

WHITE PLAINS, N.Y. — After nearly a year of consideration, top members of IBM's Entry Systems Division (ESD) will recommend to IBM corporate that it cut loose the personal computer and workstation division into a wholly owned subsidiary, according to sources close to the company.

Of course, the top brass at IBM may decide that PCs are too important to the company's future to spin them off. Then again, Frank Metz, IBM's chief financial officer, told Wall Street analysts last week that "our biggest gross profit problem is in the PS [line of business]."

But if the plan is approved, the new subsidiary will likely have a different name, a la Lexmark International, Inc., which was the IBM printer group. It will also encompass the RISC System/6000 and Personal System/2 product lines, as well as OS/2 and the OS/2 LAN Server product, sources said. James Cannavino, general manager of IBM's ESD, is expected to head the unit.

An IBM spokeswoman declined to comment on specifics of any restructuring but said that "there have been ongoing efforts since December to sharpen the competitiveness of IBM's PC business, and you will continue to see us change."

While many analysts said a less-fettered PC group would gain competitive force, users contacted were not as positive. Some were concerned that IBM might derail some of its long-term strategies, particularly those based on OS/2.

Users concerned

"I would care if they split off the PC group. One of the reasons we went with OS/2 was because it's part of Systems Application Architecture," said Keith Sievers, treasurer and vice president of information processing at Federal Kemper Insurance Co. He expressed concern that an independent subsidiary might not work as effectively to integrate products such as DB2 and OS/2.

"I would hate to see them break it up, so we are back to the problem we had five years ago, where we get our platform products from a lot of different vendors," Sievers said.

But some observers said a separate subsidiary would be free of the IBM bureaucracy and would be able to develop and ship products more quickly.

"Well, they couldn't move more slowly" than they do now, said Jeff Newman, assistant vice president of IS at Barclays Bank PLC in New York. "I think they need the ESD back the way it was in the early '80s."

Another plus under a reorganization, analysts said, is that it will further free the ESD from worries about competing with other IBM units.

"There's no question that IBM has been a politically run organization, with the total information goal — mainframe, mini, etc. — being the focus," said Tim Bajarin, executive vice president at Creative Strategies Research International, Inc. "Because of this, the PC division has been torn in multiple directions almost from Day 1. A new structure gives them a chance to be really competitive with the rest of the market as it continues being much more PC-oriented."

Still, IBM will have to resolve how it will sell both hardware and software into traditional IBM shops and how it will provide service effectively.

Analysts speculated that IBM will prepare to spin off the PC group, and perhaps some other divisions, toward the end of next year.

Mid-Atlantic correspondent Thomas Hoffman contributed to this story.

On the Blue horizon

IBM's big fall product salvo, expected Sept. 22, will include at least two high-end notebooks and a new line of low-end products, according to sources who have been briefed by the company.

IBM is also expected to revamp its Personal System/2 line from top to bottom.

The notebooks will be based on IBM's own SLC chip. One will use the 386SLC and feature an active-matrix color screen. The other will use the 486SLC2, which features an internal clock speed that doubles the external clock speed. This product will weigh 6½ pounds and will feature broad upgradability, sources said.

"This is the first notebook IBM has done that actually might be a step ahead of the market," commented one user source who has seen the product. Pricing has not been finalized, but the user expressed concern that IBM would price the product 25% to 30% above the rest of the market — a level he called too high.

The Value line of personal computers, which may be manufactured by a company other than IBM, will feature three model families positioned as low-end offerings.

Sources said the configurations included a model based on IBM's 386SLC, equipped with 2M bytes of random-access memory and either an 80M- or 170M-byte hard drive. A mid-level model will feature Intel Corp.'s 25-MHz I486SX chip, 4M bytes of RAM and the same hard drive configurations as the Value 386SLC. The most powerful version will use Intel's 33-MHz 486DX, with 4M bytes of RAM and a 170M-byte hard drive.

IBM will sell these through an 800 number and will build to order, aiming to deliver to the user within 48 hours, according to sources.

IBM is also expected to replace the PS/2 Models 70, 80 and L40SX with all new models. An IBM spokesman refused to comment on specific details but said IBM feels it is not addressing certain markets through its PS/2 or PS/1 lines.

MICHAEL FITZGERALD

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EDS pulling CA software plug

CONTINUED FROM PAGE 1

ing CA products include scheduling, security, tape management and sorting programs. EDS has more than 1,200 CA licenses, the spokesman said.

A CA spokesman said the vendor was not aware of the moves by either outsourcing company. "If this report is true, we believe that clients of EDS and Litton should be far more concerned than we are because they will be forced to use an inferior security system," CA said in a prepared statement. The company cited the product's portability and central administration features as advantages. CA holds a 53% share of the mainframe security software market, according to Sentry Market Research.

While the moves could potentially save EDS money by avoiding CA fees, EDS would be unlikely to pass on those savings to users, Merrill Lynch & Co. analyst Stephen McClellan noted. EDS signs fixed price contracts with customers, he said. "The idea is for EDS to sign them and to cut costs where possible."

A source close to EDS said the outsourcer is replacing CA's ACF2 security software with IBM's RACF. EDS is also reviewing the possibility of replacing CA software at client locations where EDS operates on-site, the EDS spokesman said.

In a parallel move, Litton, which counts financial services firm Quotron Systems, Inc. in Los Angeles and clothing retailer Brooks Brothers in New York among its outsourcing clients, is also aggressively moving away from using CA software, according to Rita Terdiman, a Santa Clara, Calif.-based consultant at Gartner Group, Inc.

Litton officials did not return telephone calls, but Terdiman said that Litton officials told her it is switching its data center security software from ACF2 to IBM's RACF, replacing CA scheduling software with IBM programs and codeveloping a tape management system with IBM to replace CA's.

IBM to revamp host strategy

BY JOHANNA AMBROSIO
CW STAFF

SOMERS, N.Y. — IBM will unveil an architecture and related products later this year that will help it position the mainframe as a giant server, an IBM executive said last week.

"We're trying to evolve our whole strategy," said Bill Wilson, assistant general manager of IBM's Enterprise Systems line of business. "We want to provide the industrial strength of large systems to client/server environments. We recognize that the large system will be another node on the network." IBM's plan, he added, is to "make the mainframe an integral and viable part" of a corporate computing environment.

In this scenario, the mainframe could be used to back up files from workstations or to run applications that reside jointly on a personal computer and on the mainframe.

Wilson said the fall announcement will include the following:

- The formal unveiling of an architecture that has been used internally at IBM for some time to develop client/server products. The architecture, probably modeled along the lines of the AD/Cycle and SystemView initiatives, will detail specifications that third-party vendors can use to plug their workstation-based products into the System/390 mainframe.
- Software from IBM and third parties that will allow applications logic to be split between the mainframe and the workstation. IBM's architecture will support MS-DOS, OS/2 and Unix on the client side, Wilson said. "They are all potential clients, no matter whose workstations they are," he added.

The eventual goal, Wilson said, is to provide intelligent code that can automatically decide the most appropriate place to run, whether on the workstation or the mainframe.

For their part, customers and analysts said this vision of the future fits with the role they see for the mainframe.

"It isn't going to go away, but I believe the mainframe as we have known it in a traditional sense will serve as a repository for data" instead of the primary place where applications reside, said William Dean, director of technology management services at Pepsico, Inc. in Purchase, N.Y.

Analysts were similarly upbeat about IBM's plans. "It's a valid role," said William Malik, an analyst at Gartner Group, Inc. in Stamford, Conn. He added that IBM has already signaled that Transmission Control Protocol/Internet Protocol will likely be the primary communications protocol used in this environment and that IBM's Advanced Program-to-Program Communications will play a key role.

About two years ago, Wilson said, IBM started a development group within Enterprise Systems to work on products that use the mainframe as a server to workstation clients. Within the last year, this group has introduced six products, including one called Workstation LAN File Services that allows a mainframe to back up files from local-area networks.

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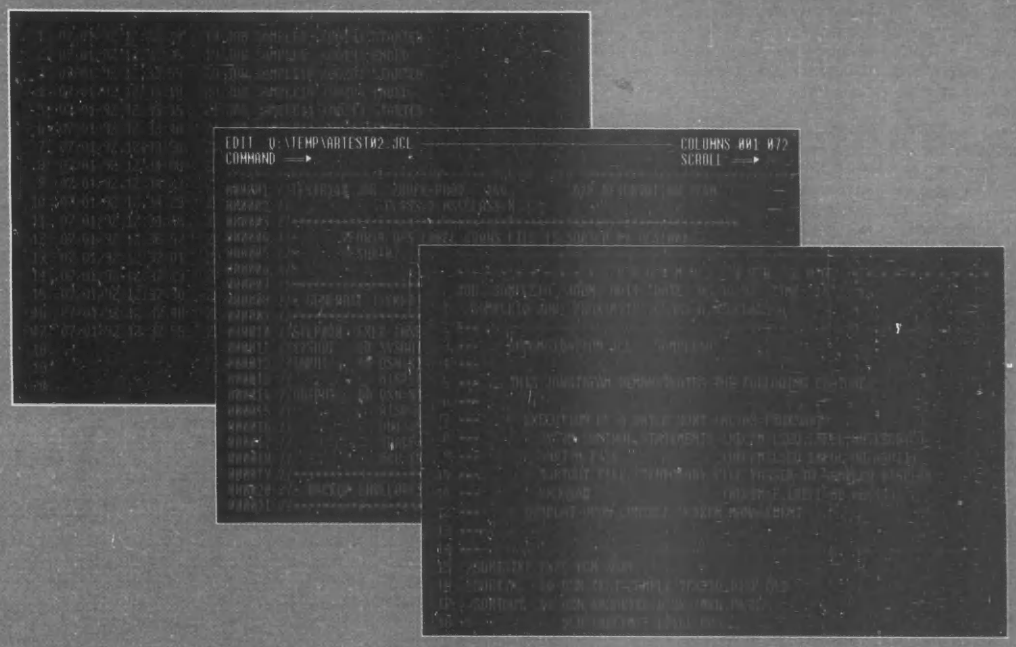

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DEC starts revamp, delays cuts

BY MELINDA-CAROL BALLOU
CW STAFF

In his first official communique with Digital Equipment Corp. employees last week, DEC's chief executive officer-designate, Robert Palmer, stressed the need to restructure the company but also said he will not begin by immediately eliminating "thousands and thousands of jobs in our company."

As a result, the time frame for finalizing head counts has been pushed back from this week until the end of the month, internal DEC sources said. The delay was attributed both to managerial changes and to the need to offer DEC the opportunity to try to find places for those who would otherwise be laid off.

Industry analysts estimated that DEC must cut approximately 15,000 employees in order to return to profitability. While Palmer grapples with layoff decisions, DEC's restructuring is already well under way, according to internal sources.

Groups merging

The separate product marketing and product management groups under DEC's Software Products Group, for example, are being merged into one unit to be dubbed the Expertise Center, the sources said.

"In the past, we put energy into component product marketing, and this restructuring effort seeks to raise marketing up a notch to collections of linked products to offer a clearer understanding to our sales force and to users," David Stone, vice president of the group, told *Computerworld*.

At least 100 employees could lose their jobs as a result, sources said, but Stone would make no estimates at this time because DEC is still deciding which technologies will be retained.

This type of streamlining will be applied across the company, other internal sources said.

DEC's Palmer *wants to minimize talent loss*

A DEC spokesman said the Expertise Center will enable DEC to place greater emphasis on coordinating its marketing.

Separately, one DEC vice president told *Computerworld* last month that DEC will also change manufacturing and the kind of attention that is put on customers.

"We want to be more responsive to customers and to collapse the time it takes to get products and services to them," said DEC's Frank McCabe, vice president of global information systems. He said that instead of merely meeting explicit demands, DEC plans to observe users at work and then determine a matrix of their requirements.

Palmer said in his internal comments that as the company redesigns its supply chain, many activities will be discovered that do not add "sufficient value" to the company.

In the meantime, many employees are panicking, one source said. Despite that and Palmer's relative newness, many DEC employees approve of a different, clearer and more accessible management style, according to the sources.

Analysts also reacted favorably to Palmer's speech. "He was unambiguous about the fact that there are too many people in the company, but he also said that they aren't going to react and whack their hands off," said Peter Kastner, a vice president at the Aberdeen Group, a market research firm in Boston.

"It was well-crafted and indicated that Palmer was in charge. It had a strong ending where he said he had zero tolerance for managers who make excuses, and he wants people to go out there and get the job done and not wait for management to tell them what to do," Kastner said.

Prime user base prepared for shutdown

BY KIM S. NASH
CW STAFF

The next two years will be busy for users of Prime Computer, Inc. equipment. Recent confirmation that the company will start shutting down its hardware operations immediately has spurred a number of users to target 1994 as the end of the line for the bulk of their Prime installations.

Few of those users interviewed last week, however, expressed alarm over their own futures, given what they view as an inevitable end to Prime's troubled business.

"We've been making plans for a while now to switch to another platform, so there's no cause for alarm," said Stan Zelepsky, manager of information resources at one of five Prime-dominated divisions of Zurn Industries, Inc. in Erie, Pa.

Poor communication

That sentiment pervades the Prime user base, according to Ray George, president of the Pittsburgh Prime Users Group. He said his group and other regional groups began formulating alternatives when "a lot of suspicious things happened" at a national user group meeting in June. That was when news hit that Prime's ComputerVision software unit would be spun off, leaving the fate of the hardware side unknown.

"I thought that Prime managers would address these hot issues while they had us all assembled, but they didn't. They packed up and left the meeting the next day," George said.

Prime officials said they were unable to respond to user queries at that time because documents had not officially been filed with the Securities and Exchange Commission. Still, officials did little to clue attendees in on what to expect.

That kind of poor communication, coupled with Prime's equally weak financial condition, cued users to start the trek to a mix of predominantly Unix hardware, including systems from Hewlett-Packard Co. and IBM.

As migration goes on, users said they will make do with what they have. ComputerVision, whose initial public offering is still planned, is counting on that because it will depend on PrimeService for a good portion of its revenue.

Users generally said they are happy with PrimeService but questioned its long-term viability now that hardware manufacturing will cease and service needs will drop proportionally.

Plus, third-party providers have stepped up efforts to undercut PrimeService prices, said George Bailey, IS director at Whitehall Co. in Norwood, Mass. Bailey, who is migrating applications off a Prime Model 9955 to Unix machines, said area service providers claimed they could save the liquor distributor $20,000 to $30,000 per year.

The processing power of a just-purchased Model 5340 will carry Bridgewater, N.J.-based Hamamatsu Corp. for another five years, systems and telecommunications manager Eric Atanda said. "But what if we need more memory or disk drives?" Atanda wondered.

Companies in the same boat must now buy equipment from independent resellers, such as 1st Solutions, Inc. in Phoenix.

No rush to toss aside proprietary minis

CONTINUED FROM PAGE 1

ment in existing applications may pay off. Eight out of 12 DEC users contacted plan to retain some or all of their VAX configuration in the near term.

Gordy Hunt, systems operations manager at Crane Plastics Co. in Columbus, Ohio, said he expects Alpha to carry him through the next few years, although he needs to start seeing the actual machines and pricing. "We're happy with our VAXs, in comparison with other vendors, which let you stay with the same software and swap out boxes over lunch."

Some recent VAX buyers said they are looking for nonproprietary systems and performance requirements beyond what they currently have. "We don't want to be tied to any particular vendor's product, but if the VAX is cost-competitive in an open environment, we'll consider more investments," said Brad Stout, corporate director at Thiokol Corp. in Ogden, Utah.

Too tardy

But Alpha was too late for consideration at General Electric Power Generation in Schenectady, N.Y., which will retain its VAX as a data repository but will bring in millions of dollars worth of Hewlett-Packard Co. HP 750s to act as high-end servers. The reasons cited by GE's Rob Rabben, cluster systems manager, included high prices. Management "saw us sucking money up" for the VAXs, he said. "I'm a Digital junkie and like VMS, but the HP systems run fast, and they're cheap." Seconding the price issue was Price Waterhouse's National Administrative Center in Tampa, Fla.

Another mixed bag of plans comes from DG users, some of whom are quite content with DG's bread-and-butter systems. Dennis Doyle, president of DG's North American Data General Users Group, said DG's proprietary MV users are "happy with the new systems that are coming out."

"We have a good working system," said Bill Rigby, data processing manager at the State of Mississippi Department of Community and Economic Development in Jackson. He said any changes are unlikely in the near future.

Doyle conceded that some users are taking a hard look at moving off DG but said it is not "a mass exodus."

"Our intention currently is not to change anything with our hospital management system [on MV], but we will be moving to open systems for clinical applications," said Bruce Reirden, vice president of information services at Women and Infants Hospital of Rhode Island in Providence.

Out of six DG users contacted last week, two were considering a move to open systems, and two had just bought DG's Aviion Unix workstations.

Michael Kaiser, director of administration at the Victim Services section of the University of Pittsburgh Medical Health Care Division in New York, said that the university will seek to reduce costs and to ease application development across platforms by bringing in open systems in the next year or so and will ultimately replace its MV system.

> "I'M A DIGITAL junkie and like VMS, but the HP systems run fast, and they're cheap."
>
> ROB RABBEN
> GENERAL ELECTRIC
> POWER GENERATION

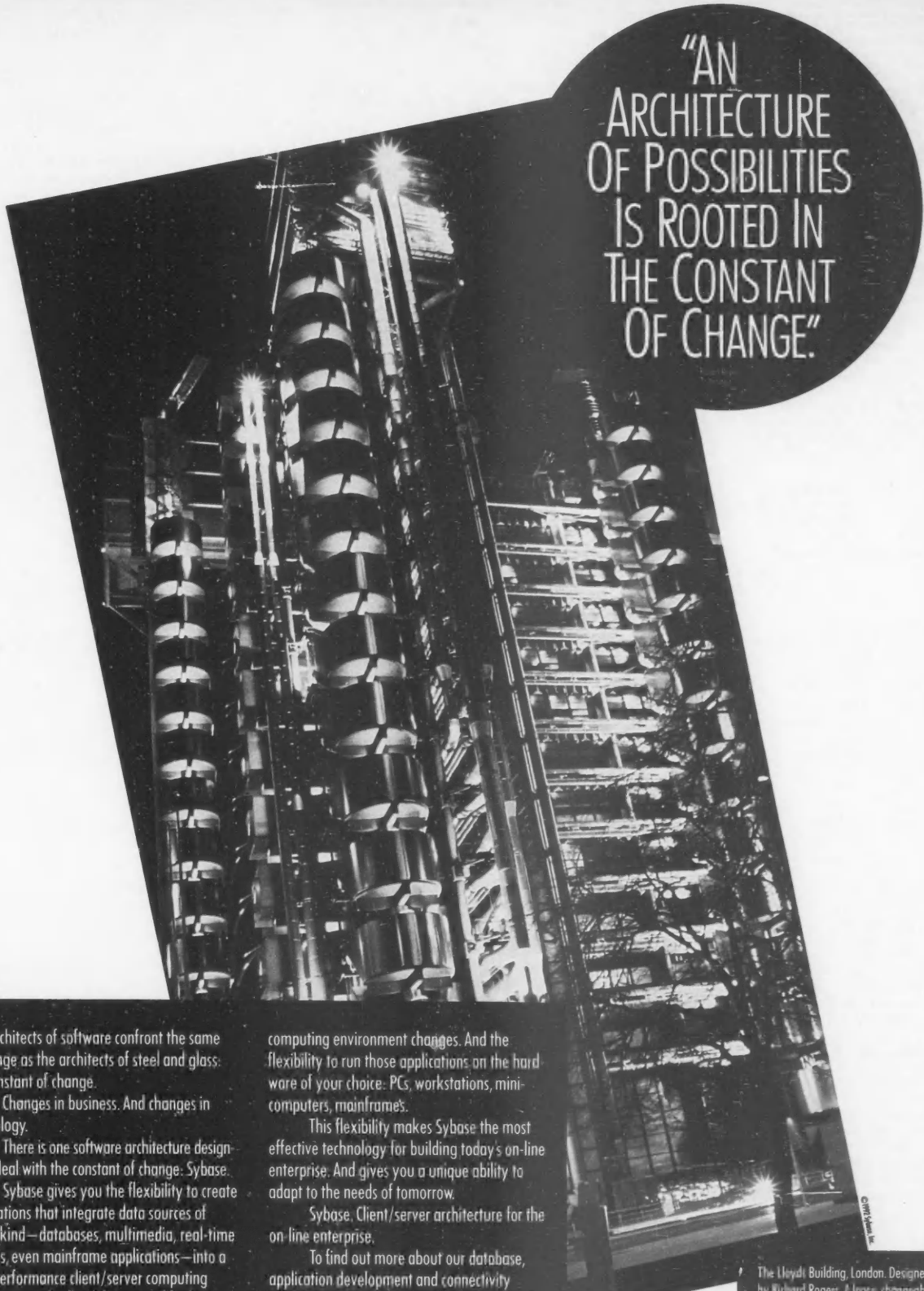
The most movement is likely to come from Wang users, many of whom began to turn over their proprietary bases several years ago. A substantial number of current and former VS users, such as Joe Caruso, head of corporate systems and technology at American Express Co. in New York, are going to personal computers and LANs, according to Matt Gillman, president of the International Society of Wang Users. LANs are a "natural progression," Gillman said, given that most VS shops have them installed already and technicians have PC experience.

Users aren't just snubbing the VS. Wang's Office/2000 strategy misses the mark as well, observers said. "If someone comes along with word processing on a PC, then you unhook your Wang. There's no need to run those types of applications on a big, costly machine," said John Cunningham, former Wang president.

Even Wang's imaging technology may not be enough. Metropolitan Life Insurance Co. in New York runs a "very successful" imaging setup in the long-term disability department, anchored with Wang software and VS boxes, said Art Boyanjian, assistant vice president.

But as it looks to move imaging to other areas, "we will review products from multiple vendors, such as Wang, IBM and FileNet," Boyanjian said.

"AN ARCHITECTURE OF POSSIBILITIES IS ROOTED IN THE CONSTANT OF CHANGE."



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Taming the health care cost monster

CONTINUED FROM PAGE 1

tools for draining an administrative swamp, said Mark Schneider, a medical technology analyst at management consulting firm Arthur D. Little, Inc.

Using a complex computer model, the Cambridge, Mass.-based firm estimates dramatic savings based on application of technologies to specific health care-related cost items (see chart this page).

Technology alone cannot lower health costs or improve quality. However, "a technological infrastructure that reduces the hassle factor and waste in administration" and spurs quantum increases in the quality and quantity of care is well within reach, Alice Lusk, president of Electronic Data Systems Corp.'s health and benefits division, said in recent testimony before the health subcommittee of the U.S. House of Representatives' Ways and Means Committee.

Lusk specifically cited the centralized and nationally integrated claims processing, management, payment and adjudication system that EDS created for parent firm General Motors Corp. The 3-year-old system has saved the automobile manufacturer some $800 million so far.

And while many big companies saw health care costs rise 20% or more last year, GM's cost increases were in the single digits, according to Lusk.

Libenson: *Cut $60K*

Good for the goose

What is good for GM appears to be good for the U.S.A.:

- In Salt Lake City, Latter Day Saints Hospital uses an automated patient information system to detect adverse drug events — allergies, unpredicted drug interactions, dosage problems and the like — and alert the staff to their possible occurrence.

The system, according to Dr. T. Allan Pryor, co-director of medical informatics, catches adverse drug events 60 times better than did practitioners. Latter Day Saints Hospital has yet to put a dollar amount on the savings.

However, a study commissioned by Ontario's provincial government estimated that the elimination of adverse drug events would save Ontario hospitals roughly $140 million a year.

- In St. Paul, Minn., an expert system that spots irregularities in doctors' bills is saving Fortis Benefits Insurance Co./Woodbury an estimated $540,000 a year, said medical management coordinator Donna Hummer.
- In Miami, 585-bed Cedars Medical Center canceled its contract with a medical records transcription bureau.

Instead, the hospital put terminals in the homes of the transcriptionists, who now telecommute to work across 9.6K bit/sec. leased lines to Cedars' information system.

Net savings to Cedars amounted to $60,000 a year simply because of a switch away from the outside service, according to the hospital's vice president and chief information officer, David Libenson.

And that's just for starters. "Productivity is up 40%, and employee turnover has gone from 33% to zero," he noted. "So we're saving at least 40% of total cost in addition to the $60,000."

- In Highland Park, Ill., an electronically enabled just-in-time inventory management pilot allowed Highland Park Hospital to whittle its $260,000 warehouse

Surgical precision

Arthur D. Little estimates annual cost reductions of more than $36 billion are possible through four different health care applications:

- Electronic management and transport of patient information will decrease costs by almost $30 billion.
- Electronic submission and processing of health care claims offer a potential reduction of almost $6 billion.
- Costs of hospital materials and supplies will be diminished by more than $600 million through the use of electronic inventory management systems.
- The use of videoconferencing for professional training and remote medical consultations will reduce costs by over $200 million.

CW Chart: Janell Genovese

Hacking health care costs

A technology-driven re-engineering of the U.S. health care system promises to shrink costs at a stunning rate. Arthur D. Little, Inc. submits a sampling — and says that its figures are conservative

Proposed change	Projected annual savings
Use electronic means to supply extensive diagnostic and educational information to patients.	$5 billion
Reduce hospital/emergency room visits through computerized patient management systems.	$8.3 billion
Through same, reduce hospital stays.	$1.9 billion
Let patients "visit" the doctor on-line via teleconferencing and home health services.	$15.3 billion
Eliminate file clerk labor costs by automating hospital record-keeping.	$198.7 million

CW Chart: Janell Genovese

Try a terminal bedside manner

"If half the hospital staff are nurses, the logical place to put [IS] technology is with them," says Fred Pirman, senior vice president at Humana, Inc. in Louisville, Ky. Labor accounts for 60% of most hospitals' costs, with nursing representing half of this figure, he adds.

Yet only about 150 to 200 of the nation's 7,000 hospitals have experimented with bedside terminals, according to Bill Donovan, editor of "Inside Healthcare Computing," a biweekly newsletter published in Long Beach, Calif.

The roadblock, according to Donovan and others, has been creating "intuitive" systems that also clearly address clinical rather than administrative or accounting requirements.

"You can't say to a nurse, 'We have a great new system for capturing charges.' If the only thing you're going to do is generate a bill, you'll be much less likely to get [clinicians] involved," said John Page, executive director of the Healthcare Information and Management Systems Society, a 4,000-member group within the American Hospital Association.

St. Joseph's Hospital in Milwaukee already deploys wall-mounted touch-screen systems; recently, it began testing wireless portable terminals. While St. Joseph's found time savings varied widely, depending on the type of ward and type of patient being treated, it also documented a lower hours-per-patient day — a measure of nursing time per patient — wherever bedside units were in service.

Projected savings of some four hours per nursing shift could translate into $1.22 million in annual savings for St. Joseph's, according to figures cited by management consulting firm Arthur D. Little.

St. Peter's Medical Center in New Brunswick, N.J., has forestalled $450,000 in charges to the hospital during the last 18 months by creating a combined bedside and patient care review system.

Nurses at St. Peter's record patients' vital signs and medical procedures by way of a wall-mounted system that reads bar codes on hospital inventory or preprinted procedure charts.

"Information from the patients' rooms and other hospital systems downloads into the care management system, which is looked into daily," said Betty Manco, vice president of nursing, adding that the hospital's savings during the past year and half "wouldn't have been realized just by putting in the bedside system."

The lion's share of the basically clerical savings from bedside systems will be in nurses' time rather than money, according to Arthur D. Little. Moreover, many experts pointed out, such gains quickly extend to patients in terms of care: The time that nurses do not spend on clerical work can be devoted to patients. So can the dollars saved by hospitals — $902 million in transcription-related costs in the U.S. alone, according to Arthur D. Little estimates.

"You're also less likely to have the sort of error that results in malpractice," Donovan added, noting that the audit trail from such systems can actually make a hospital less vulnerable to malpractice lawsuits.

ELLIS BOOKER and NELL MARGOLIS

Snipping paper cuts costs

Electronic transmission of patient information could save the U.S. some $30 billion in annual health care costs, according to computer-modeled estimates compiled by the Cambridge, Mass.-based management consulting firm Arthur D. Little.

The gains will be made, according to Arthur D. Little and the concept's many other proponents, by replacing bulky, time-consuming and often inaccurate paper and telephone marathons with on-line, real-time networked transactions.

Promed, the New Haven, Conn.-based subsidiary of Blue Cross/Blue Shield of Connecticut, has cut $300,000 worth of administrative costs from its parent's bottom line by processing claims across what it said is the first statewide hospital/practitioner medical management network.

In neighboring New York, the State Department of Health is mounting a pilot program that will link 12 hospitals in a standardized claims billing, processing and payment system. The Chicago-based American Hospital Association has an electronic claims network under consideration.

Electronic processing could knock $322 million off the yearly bill. "And our estimates are conservative," analyst Mark Schneider said. Others — the American Hospital Association and U.S. Health and Human Services Secretary Louis Sullivan, for example — project savings in the $25 billion ballpark.

Health care IS activist and Travelers Insurance Co. President Joseph Brophy hailed the mid-July launch of an on-line, real-time network that aims to all but eliminate paperwork and phone calls among health care professionals as a momentous occasion [CW, July 27]. Not only could the proposed network halve the current multibillion U.S. health care administration bill, Brophy said, but it could also open a new industry niche.

A slew of vendors developing practice systems are crowding the starting gate. "Now they're asking 'Where are the standards?' " he says. "As soon as the standards are here, they're going to be out there selling the doctors."

NELL MARGOLIS

inventory costs down 70% to $78,000.

The megasavings are down the road, but don't expect a smooth ride. "It's easy to say, 'Let's automate.' It's hard to do it," said the CIO at a major East Coast teaching hospital who requested anonymity.

According to the CIO, an automated billing system slated to go live this fall at the hospital is being counted on to save millions of dollars in the future — but as of today, "it's cost us millions of dollars, and it's getting more expensive all the time.

"Everybody raves about the savings, but nobody tells you about the extra work that your personnel are going to have to do, or the way the regulations you're automating keep changing or the fact that every state has different ways of classifying patients," the CIO said.

Another issue that gets short shrift in the eagerness to hail information technology as a quick fix is the fact that implementing technology and using it productively are not the same, said Professor Steffie Woolhandler at Harvard Medical School.

Until recently, for instance, one major urban hospital cited by Woolhandler assigned new identification numbers to each patient, even if the patient had been there many times.

"Not only was this a waste of time for the patients," Woolhandler said, but "it also made the entire on-line medical record less than useful for diagnostic purposes."

In addition, a recent article in *The Wall Street Journal* flagged a frustrating prospect: Watchdog associations and technologies, created specifically to lower medical bills by rooting out redundancy and fraud, are in some cases inflating the bills by costing health care providers more than the mistakes and misdeeds that they prevent.

Said the anonymous CIO: "There's a real rat's nest of things going on."

Maintenance can be key

If information technology can shrink the country's bloated health care bill by billions, will back-room costs dull the shine of up-front savings?

Not if users follow the example of smart health care and information systems professionals who are already keeping a tech-driven lid on health care costs.

At Cedars Medical Center in Miami, Chief Information Officer David Libenson canceled all maintenance agreements with most equipment vendors. He then contributed the gross amount, about $1 million over four years, to an "insurance pool" from which Cedars draws to pay the same vendors for necessary tune-ups and repairs — "but only when the equipment actually needs it," Libenson said. The shift is shrinking Cedars' technology maintenance costs by about 25%.

A similar strategy is saving North Oakdale Medical Center, which runs 380-bed Pontiac General Hospital in Pontiac, Mich., some $219,000 a year in maintenance. Also, materials management director David Batkie said the hospital is pocketing between $27,500 and $100,000 a year in rebated premiums.

"There's no reason everyone can't do something like this," Libenson noted. "The U.S. is paying close to $1 trillion in health care. Suppose 5% goes for capital expenditures — that's $50 billion. Suppose maintenance is only 10% of that — that's $5 billion. Now, suppose the equipment only lasts four years beyond warranty and that we can only save 25%: Aw, gee — what if you could only save $5 billion?"

Finding the right computing platform for the job has also proven priceworthy at Cedars. When the time came to replace an old IBM 5520 system with 27 workstations attached, Libenson said, "We didn't rush to a PC network." Instead, the hospital switched its workers to a Unix-based network of AT&T 3B2 processors loaded with full office automation software. "I can put a workstation into a PC network for about $3,000 today," Libenson noted. "It costs me about $600 to add a user to ours."

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NEWS SHORTS

Sybase buys into multimedia

Sybase, Inc. said last week that it will acquire Gain Technology, Inc., a Palo Alto, Calif., multimedia tool kit vendor. Sybase will pay for Gain by issuing 2 million shares of new stock — worth $50 million to $60 million — in a deal that should close in September. Gain, which will become a Sybase subsidiary, is expected to produce $15 million a year in sales for $160 million Sybase. Gain's software stores images and text in an object-oriented database from Objectivity, Inc. in Menlo Park, Calif.

NCR opens disaster recovery site

NCR Corp. last week entered the facilities side of the disaster recovery business, announcing the opening of a 300,000-sq-ft workgroup recovery center. The Rochelle Park, N.J., site will be run by NCR's Data Services Division, best known for its data processing services in the financial industry. The hot site, which will serve the metropolitan New York area, contains computers and work areas able to support a total of 200 users.

American Express launches facility

American Express Travel Related Services Co. last week formally opened its New York Payment Services Center on Staten Island, N.Y. The facility will process American Express' worldwide payment operations using an IBM Series/1 for data entry and Banctec, Inc. image processing hardware and software for check processing. The Banctec system processes 37 million customer checks annually for American Express. The new facility will house 250 employees.

Hayes sued by competitor

Sierra Semiconductor Corp. last week filed a suit against Hayes Microcomputer Products, Inc. in San Jose Federal Court charging trade libel, false and misleading advertising and unfair competition. The suit was prompted by a series of allegedly inflammatory Hayes ads claiming that an escape sequence used by some modem manufacturers, including Sierra, will cause "untold chaos" and that "the only solution to the crisis is to replace their modems," Sierra said.

Consortium eyes fast backplanes

General Electric Co., AT&T, Honeywell, Inc., and IBM have formed the Optoelectronic Technology Consortium to develop multigigabit/sec., fiber-based backplanes for multiprocessor computers and telecom switches. Backed by $8 million in Defense Advanced Research Projects Agency funding, the project aims to develop "precompetitive" technology.

Chase outsources in Brazil

A senior information systems executive at Chase Manhattan Bank NA last week said that the $97 billion banking company has outsourced its Brazilian data center operations to IBM-Brazil for an unspecified cost. The executive said Chase typically spends $1.5 million annually to maintain its Brazilian data center and that the decision to outsource will yield Chase some small cost savings.

Short takes

Greg Carroll took over as president of the **Computer Dealers and Lessors Association**, succeeding Kenneth Bouldin, who had been president since April 1988. . . . **IBM** and **PacificCorp Capital, Inc.** settled an IBM-initiated suit over remanufactured memory. PacificCorp will be required to tell customers when it uses memory remanufactured without IBM's consent. . . . **Sun Microsystems, Inc.** will use products from **Sybase** throughout its worldwide operations. It has an unlimited use license. . . . **Information Builders, Inc.** will introduce low-priced "starter kits" for its EDA/SQL database access product line in the fall. . . . **CompuServe Information Service** is providing its users with the chance to go job hunting electronically, through access to the Adnet Online, the electronic help-wanted advertising service.

Northgate readies new PC line

Mail-order firm plans aggressive pricing strategy for Slimline ZXP

BY MICHAEL FITZGERALD
CW STAFF

EDEN PRAIRIE, Minn. — Northgate Computer Systems, Inc. last week confirmed plans to replace its Slimline personal computers with a new line this month. The new models, which will feature processor upgradability, the use of virtual cache and local-bus video, are also expected to sport a short-lived price advantage.

Phil Deering, Northgate's marketing services manager, said the company's base systems will cost less than Compaq Computer Corp.'s 486-based Deskpro/I, which currently ranges in price from $1,879 to $2,549 without a monitor (see chart).

The new line, called the Slimline ZXP (for zero-insertion force expandable processors), will begin shipping the week of Aug. 24, according to Deering. He said Northgate's sales force will begin selling the new line to major accounts this week.

Under pressure

Analysts welcomed the new line, but they said continued product and pricing pressure from vendors such as Compaq will further challenge the struggling mail-order vendor, which recently sold 51% of its stock to an investor group after Everex Systems, Inc. backed away from a deal to buy it.

"The pricing seems pretty aggressive, but the problem is, what kind of margins will they get on this?" said Steve Widen, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. "Other companies are going to come out with aggressive pricing, too, so the question is do they have the staying power, and I don't have the answer for that."

Both Compaq and IBM are expected to make major product moves in September, and Widen cited Dell Computer Corp. and Leading Edge Products, Inc. as other companies rumored to drop prices.

Deering said Northgate expects to reduce prices in the future as well.

Northgate will use the full line of Intel Corp. I486-based processors, including the 486SX, 486DX and DX2 products.

Deering would not comment on whether Northgate would specifically use the rumored 33/66-MHz DX2 or 33-MHz 486SX proccessors, but he said that if Intel delivered these products this month, as expected, Northgate will support them.

Use of a zero-insertion force, or ZIF, socket in the new line will provide for simple upgradability. Northgate also intends to eliminate its math coprocessor socket to make way for Intel's upcoming plastic packaged processors.

The use of virtual cache involves eliminating the cost of cache memory. Cache is used to speed up PC performance. Northgate's virtual cache design will use write buffers to eliminate wait states during the processor write cycle. Deering said performance will at least equal that of systems with cache.

The advantage of the local bus comes when a user upgrades the processor. In an ordinary system, video performance improves only somewhat after a processor upgrade. With a local bus scheme, video improves in direct proportion to the processor speed.

The next generation

Northgate's coming family of Slimline ZXP desktop computers will replace its Slimline systems

Product features

Northgate will use the full range of I486 processors from Intel. All the products will come with a local-bus video and virtual cache that uses a write buffer, and they will be fully upgradable through a ZIF socket.

Preliminary pricing

One example is a 25-MHz, 486SX-based ZIF expandable processor, with 4M bytes of RAM, 120M-byte hard drive, Panasonic Super VGA monitor and 1M-byte of video RAM, which lists for $2,149.

CW Chart: Janell Genovese

Everex mulls restructuring, other cost-cutting measures

BY MICHAEL FITZGERALD
CW STAFF

FREMONT, Calif. — Onetime personal computer highflier Everex Systems, Inc. may be wishing for a parachute. It will not make money in the fourth quarter and may lose money for the year.

In addition, Everex confirmed last week a report in the *Silicon Valley Business Journal* that it is considering ways to cut costs. Cost-cutting measures could include a restructuring, although the company refused to comment on reports that it will lay off more than 20% of its work force.

Worse, some industry observers, who requested anonymity, said Everex is on their short list of PC companies that may not survive. These same analysts said the company has told them it wants to cut operating expenses from its current 20% of revenue to 15% or 16%, which one analyst said implies a cut of 400 to 500 people. The company employs between 2,300 and 2,400 people.

"Look, people have tough quarters. We are going to survive," said David Zacarias, Everex's chief financial officer.

Eric Zimits, an analyst at William K. Woodruff & Co. in Dallas, called it this way. "Everex is one of the weaker participants in the market, and it has to take things [such as layoffs or belt tightening] one step further than healthier companies. But it should make money for the year," he said.

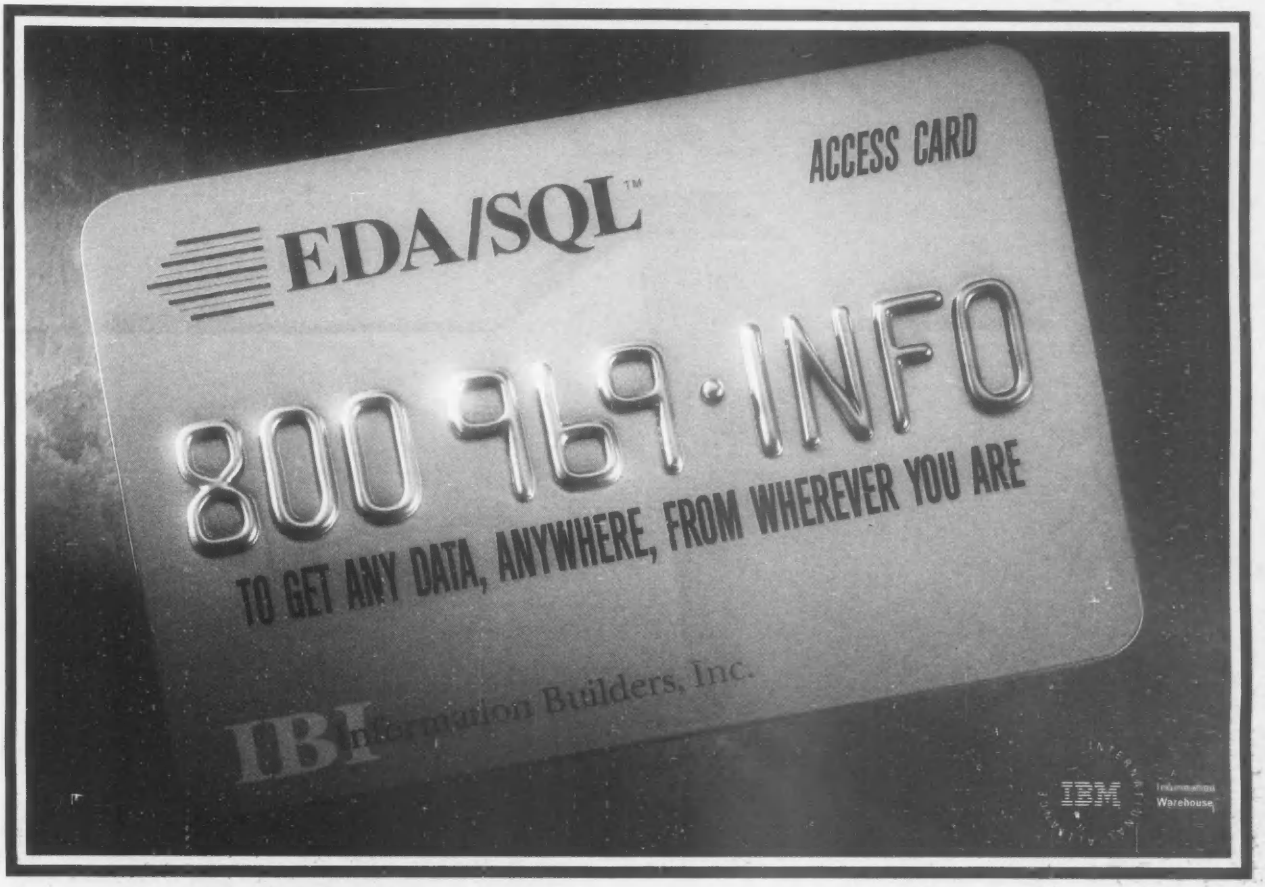
While Everex posted solid results in 1990, the company lost money in 1991. Analysts said it has had problems getting products to market and staying focused, as it sells a number of peripherals in addition to systems.

The company has also cast about for ways to expand its channels, recently abandoning an effort to buy mail-order PC maker Northgate Computer Systems, Inc.

Others said company founder Steve Hui, who owns an ostrich ranch, was caught with his head in the sand by events such as Compaq Computer Corp.'s June product release and price cuts.

Genelle Trader, vice president of marketing at Everex, would not comment on whether layoffs were being considered. She said Everex expects to have a plan in place by the end of the month. She also firmly denied a report in the *Silicon Valley Business Journal* that Everex will abandon its midrange PC lines to focus on its high-end Step Cube line of servers and its low-end MaxLogic line.

REACH OUT AND ACCESS EVERYTHING



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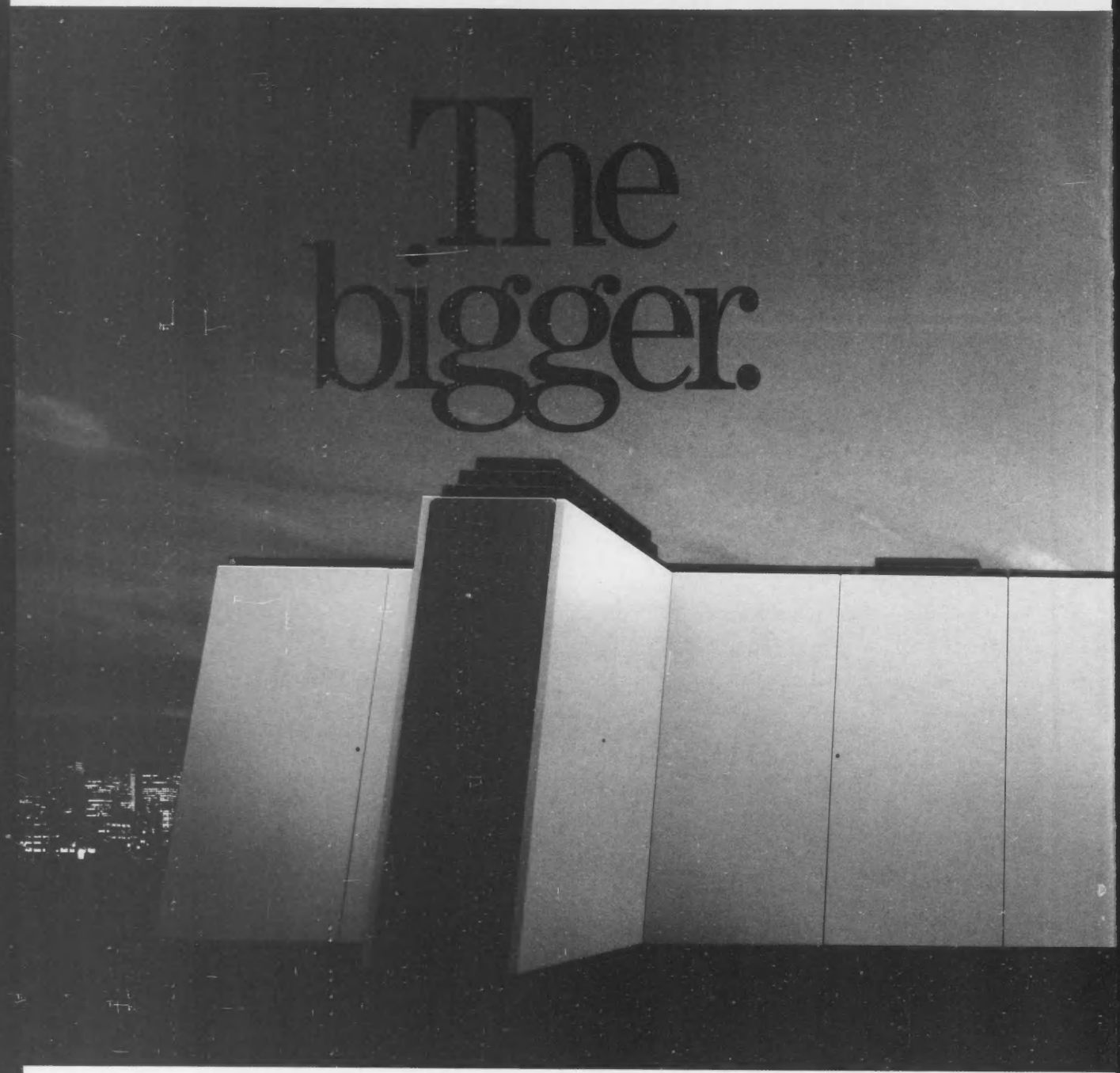

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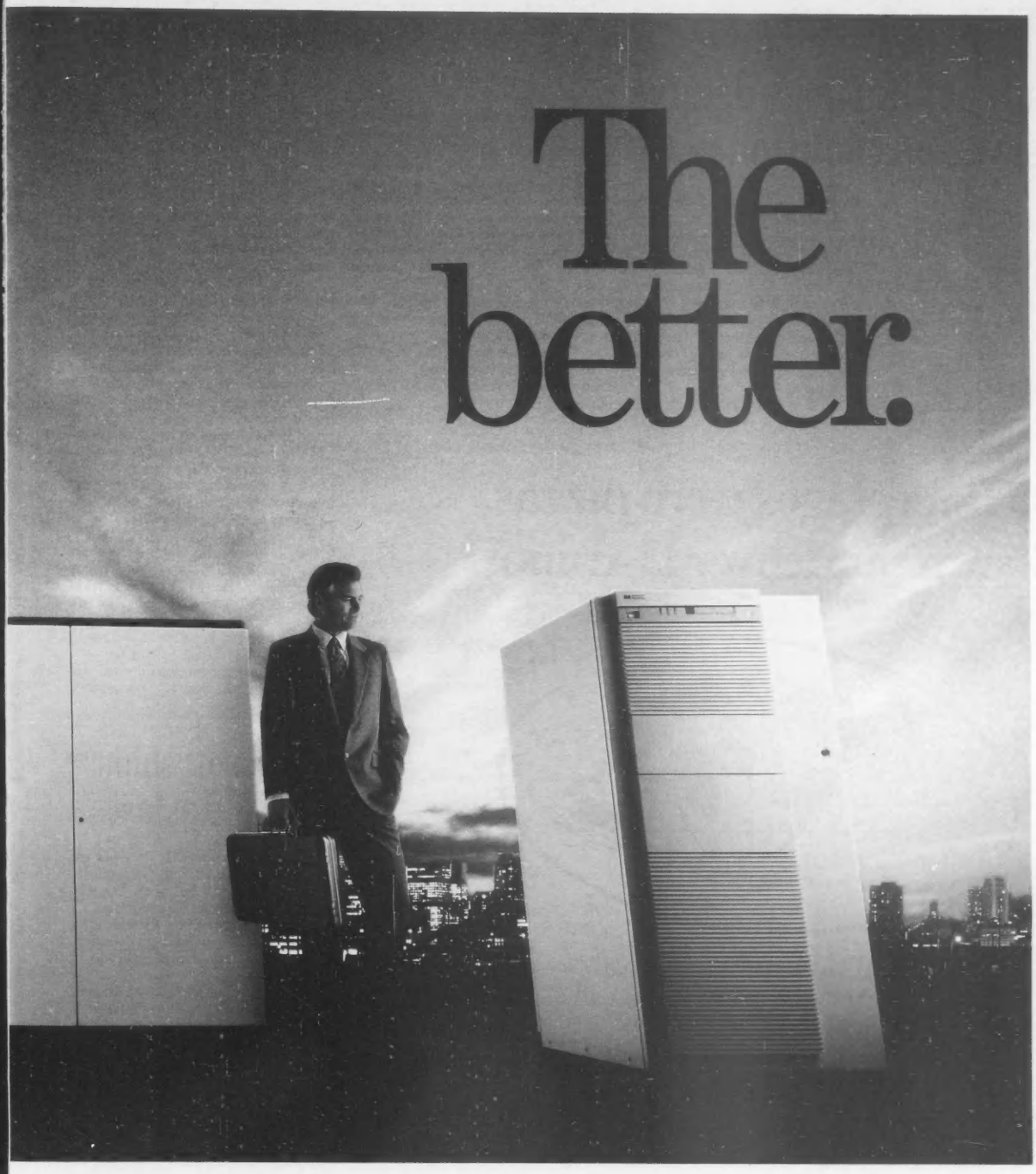

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Outsourcer Confirms demise of reservation coalition plan

BY MARK HALPER
CW STAFF

FORT WORTH, Texas — After spending $125 million over 3½ years, a user consortium developing the state-of-the-art Confirm travel industry reservation system all but disbanded last week, undone by the insurmountable task of integrating a reservation database and decision support software.

"We have decided we'll stop development of the system unless our partners decide to come back into the process," said Joseph Atteridge, president of AMR Information Services, Inc., the lead player in the four-member Information Consortium (Intrico) working on Confirm.

The other Intrico partners — Hilton Hotels Corp., Marriott Corp. and Budget Rent A Car Corp. — had until last Friday to decide whether to rejoin Confirm. Atteridge was skeptical at midweek that they would rejoin.

AMR, based here, stated in a press release last month that it took a $109 million write-off for its second quarter ended June 30 to reflect "anticipated losses associated with Confirm."

The Confirm system had been billed as the first computerized reservation system that would fully combine airline, hotel and rental car operations. Its collapse comes as several outsourcing companies, including Electronic Data Systems Corp., IBM's Integrated Systems Solutions Corp. (ISSC) subsidiary and Perot Systems Corp., feverishly chase travel industry clients in their own efforts to build an all-encompassing system.

One coveted prospective client, The Hertz Corp., is entertaining outsourcing offers from EDS and ISSC while weighing information systems changes.

Intrico's demise enhances the possibility that its members could-seek partnerships with other companies. Marriott, for instance, is believed to have held outsourcing negotiations with EDS during the last 18 months.

Intrico partners were relying heavily on expertise from AMR, a data services and outsourcing company that is a sister to American Airlines in the AMR Corp. fold. AMR was leveraging know-how from American's Sabre airline reservation operations and from a separate AMR Corp. unit that provides yield management software.

Atteridge said the task of tying together Confirm's Transaction Processing Facility-based central reservation system with its decision support system proved to be overwhelming.

"We found they were not integratable," he said. "The data flow between them was not smooth."

The problem had surfaced earlier this year when Intrico disclosed it would delay Confirm by 18 months until the end of 1993 [CW, May 11].

It is unclear what will become of the lines of code that AMR has developed to date and whether all of the consortium members will claim ownership to that code.

"We have not had those discussions," Atteridge said, adding that as the partners dismantle their joint-development effort, "that will be one of the negotiating points."

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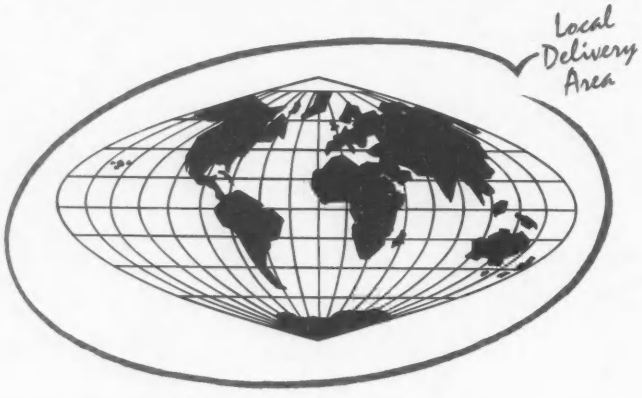

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Microsoft ships Mail 3.0 at last

After months of providing previews and demonstrations, Microsoft Corp. officially shipped Mail 3.0 last week. The software was promised for the end of June.

It includes support for the Messaging Application Programming Interface, which allows diverse applications to be "mail-enabled."

Mail 3.0 is available now for a list price of $695, including a 10-workstation license. Additional workstation licenses are available in 5-, 20-, 100- and 500-workstation packs for prices ranging from $395 to $22,500.

In addition to Mail 3.0, Microsoft unveiled Schedule for Windows, a calendaring application for workgroups and individuals. Schedule, which allows users to schedule tasks and invite other users to meetings via electronic mail, is the first of two workgroup applications Microsoft said it would ship this year.

Pricing for Schedule begins at $195 for a two-workstation starter pack. Additional packs are available.

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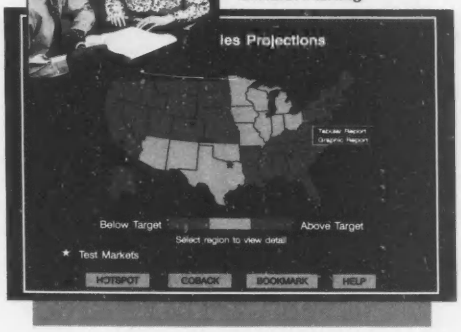

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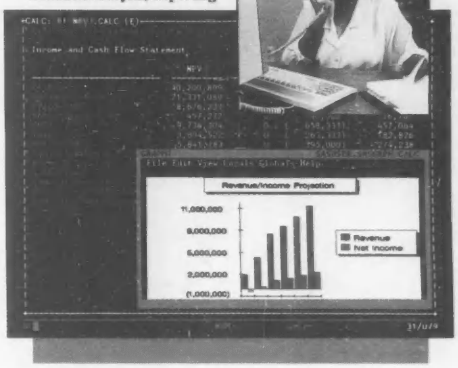

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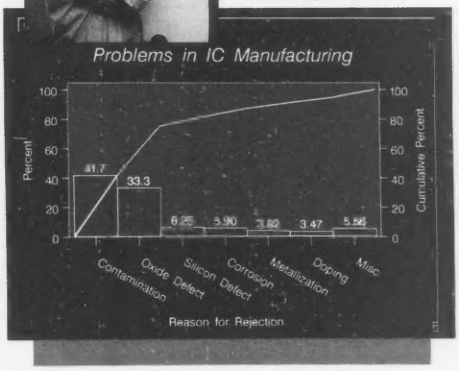

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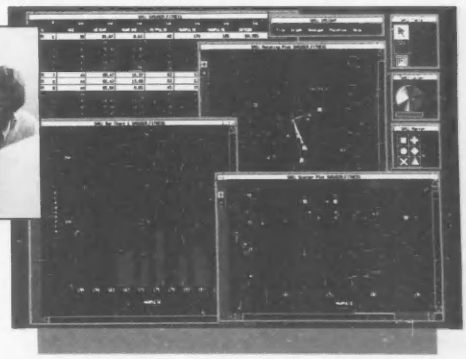

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Clinton pushes investment in high technology

BY JEAN S. BOZMAN
CW STAFF

CUPERTINO, Calif. — Taking a cue, perhaps, from departed presidential candidate Ross Perot, Arkansas Gov. Bill Clinton held an electronic town meeting at Tandem Computers, Inc. last week. He used the opportunity to advocate federal policies that would encourage investment in high-tech firms.

Anchoring a nationwide teleconference with 100 downlinks that reached 8,500 Tandem employees, Clinton answered questions called in from remote sites as well as those from an audience of 200 at Tandem's headquarters. He directed some of his commentary toward fueling economic growth by changing the country's investment practices.

"The way the American budget is organized, we make no distinction between borrowing for investment and borrowing to spend," Clinton said, adding that good investments include new factories, more research and development and better education.

Clinton has pledged to double the rate of government spending on investment, which is currently about 9%, by ensuring that every dollar taken from military R&D will go into R&D for civilian technologies. "Our country ought to operate more like the best global companies," he said. "We ought not to resist change and [become] a country that has a high-wage, high-growth strategy."

Clinton *promotes high-tech programs*

Members of the audience were impressed by the breadth of the discussion, but they wanted to hear more about high technology and computers. "His comments were not specific, but he felt he had to address the need for some kind of comprehensive industrial policy," said Chip Greenlee, manager of finance industries marketing at Tandem.

Some observers approved of Clinton's idea to create a civilian equivalent of the Defense Advanced Research Projects Agency (DARPA), which stimulated defense research. Clinton has said his administration will create a nonmilitary DARPA to help develop technologies and bring new products to market.

Intel loss may open chip market

BY MICHAEL FITZGERALD
CW STAFF

SHERMAN, Texas — Cyrix Corp. scored a major win in a lawsuit against Intel Corp. that may open the door for extensive competition and innovation in the microprocessor arena.

A federal judge ruled two weeks ago that Cyrix's FasMath math coprocessor, which mimics Intel's 80387 coprocessor line, could be legally made by SGS Thomson Microelectronics, Inc. under the protection of SGS' extensive cross-licensing patents with Intel.

The judge extended the decision to include any products SGS might make for Cyrix, not just math coprocessors.

This raises the possibility that a major semiconductor company with extensive cross-licensing agreements such as SGS could build chips designed by anyone, even if these designs infringed on patents.

"This decision is of much more importance for other companies who are thinking about cloning some of those parts. This opens up the whole issue of semiconductor companies [without fabrication plants] gaining access to broad-based patents," said Drew Peck, an analyst at Donaldson, Lufkin & Jenrette Securities Corp. in New York.

F. Thomas Dunlap, Intel's general counsel, said considerations such as these made the decision fly in the face of patent law. "This is a decision unique to the state of Texas."

While the case, and therefore the decision, does not address questions about whether Cyrix's design infringes on Intel patents, Intel acknowledged that it would be unable to pursue this issue until early next year, when a separate trial against Cyrix begins.

In the meantime, analysts said Cyrix will gain some credibility in the chip market.

"Cyrix won both a legal case and marketing momentum," said Ken Lowe, an analyst at Dataquest, Inc., a consulting firm in San Jose, Calif. "It's going to open the door for a lot more companies to look at their chips."

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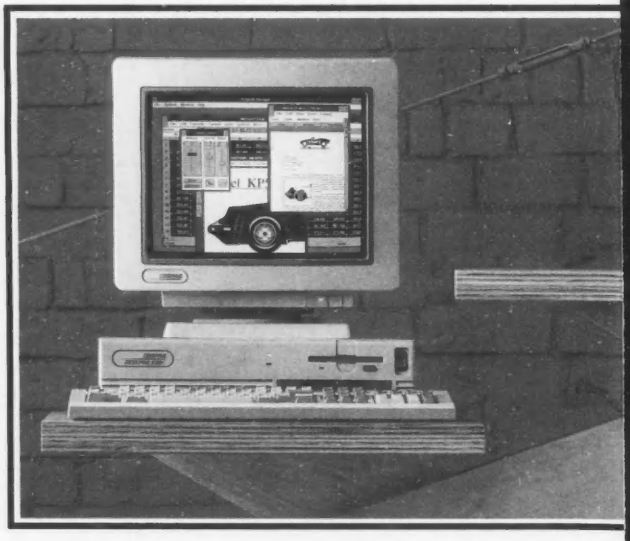

Simple chip upgradability and a 64-KB cache

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memory module option provide quantum leaps in performance. Without

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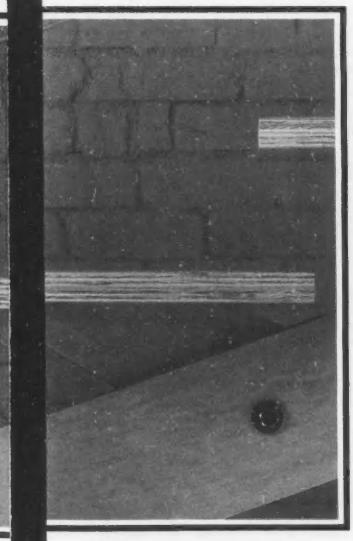

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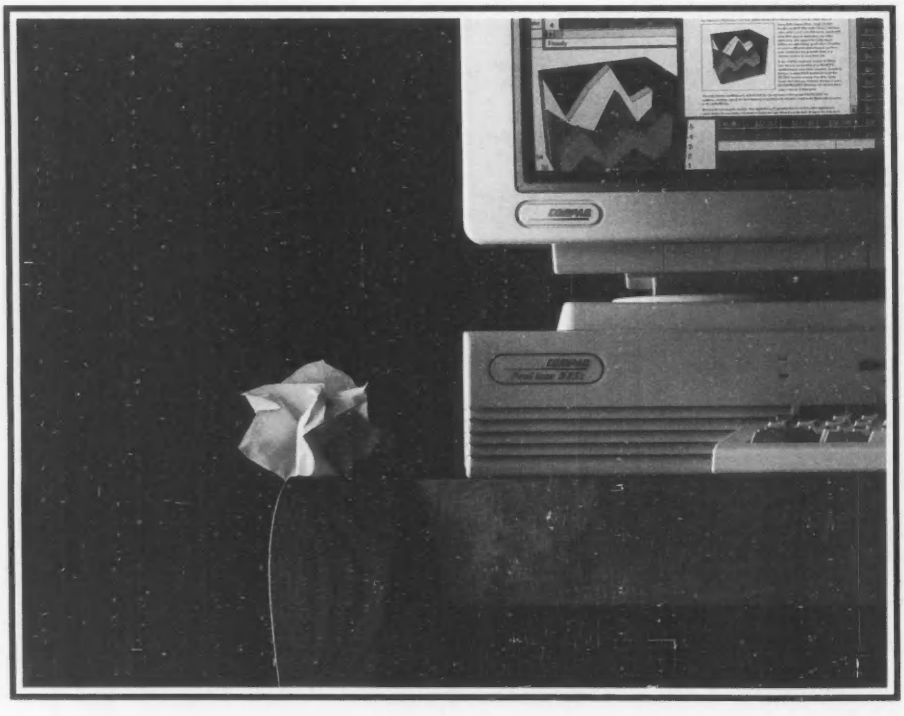

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All models include high-resolution 1024 x 768 video and preinstalled Microsoft MS-DOS 5.0 as published by Compaq

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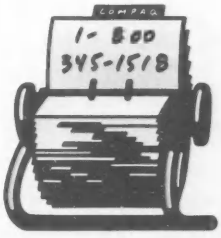

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ADVANCED TECHNOLOGY

TECH TALK

Making waves unseen

■ Utilizing new supercomputer software, designers may soon be able to study in finer detail how electromagnetic waves interact with the surfaces of aircraft, missiles and other objects, which raises the possibility that vehicles could better hide from radar detection. Cray Research, Inc. recently claimed a breakthrough in electromagnetic simulation and design with the development of a software tool that reportedly helps aerospace engineers understand how electromagnetic waves impact and scatter from a vehicle's surface. Cray said the Electromagnetic Design System (EMDS) is the first such product available for supercomputers. The product is in beta-test form now, and it is awaiting release for Cray's Y-MP supercomputers. The company also indicated that a future version of EMDS will model electromagnetic waves at the electron level, which will make it useful in integrated circuit design.

Eye on the future

■ As part of a recent program sponsored by Apple Computer, Inc., college students tried to provide the computer industry with a look at the computer of tomorrow. Teams of students from seven universities produced prototypes of futuristic computers that included portable and wearable computers, a computer that translates sign language into voice display and one that uses the Global Positioning System to provide landscape architects with precise site information. The university teams were asked to create interfaces for a family of three related computers to provide Apple with feedback on how people want to use computers.

Upcoming

■ Virtual Reality '92, an exhibition and conference focusing on virtual reality, artificial reality and cyberspace, is scheduled for Sept. 23-25 in San Jose, Calif. It is sponsored by Meckler Corp. in Westport, Conn.

Big things come in small buttons

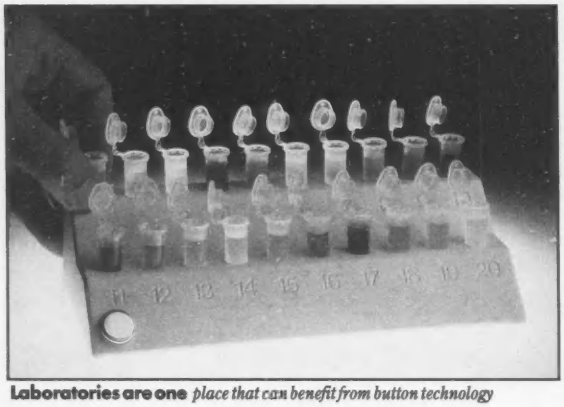
Able to stick to virtually any object, memory buttons provide a wealth of information

BY MITCH BETTS
CW STAFF

Technologists have long promised "information at the touch of a button" and have seldom delivered. But a new technology, sometimes referred to as "smart buttons," makes good on that promise in the most literal way.

In this case, the technology starts with a "button," a stainless-steel can that looks like a watch battery and is about the size of a dime. Inside the button's protective (and conductive) shell is a special read/write microchip that holds up to 512 characters of information.

Next comes the touching part. With a handheld data terminal and a penlike probe, the user touches the probe to the button, hears a "knock" sound that confirms the electrical connection and then reads the stored data or updates it.



Laboratories are one *place that can benefit from button technology*

The buttons are cheap enough — roughly $2 to $7 each — that users can attach them with adhesive backing to virtually anything, from employee security badges to big-ticket equipment that must be monitored or tracked in the field. For example, a button that contains a record of all service calls could be stuck on a furnace.

"What's driving this technology is having the information attached to whatever it's describing," said Kevin R. Sharp, a Tucson, Ariz.-based consultant specializing in automatic identification systems. In other words, imagine having a big sticky-note attached to any object, even objects that get rough handling or are subjected to harsh environments.

"Originally, it didn't impress me ... but then I noticed at a trade show that the vendors just got mobbed, mostly by users with very specific problems that they could solve with buttons, because of the [relatively low] price point," Sharp said.

So far, the beta-test users have declined to go public with their pilot implementations, but Sharp said one of the most promising applications is access control for high-security buildings.

A button attached to an employee's identification badge is pressed onto an electronic lock that determines whether the employee can enter that area and then time-stamps the employee's entrances and exits. The button has a unique serial number etched into its memory that makes it tamper-resistant and impossible to copy.

Vendors said dozens of other applications are possible, including stick-on buttons for hospital ID bracelets, hazardous waste drums, fire extinguishers, factory work-in-progress, medical samples, cargo containers, fleet vehicles, storage tanks and even ID tags for livestock.

Choices

Memory buttons fall into the same technology niche as bar codes and radio-frequency ID tags. However, all three should be viewed as complementary rather than competing techniques, according to Bert Willoughby, a Pipersville, Pa.-based consultant on automatic identification technology.

"They all have their place in the factory and warehouse of the future," he said. For example, buttons could be used to track maintenance tools, generators and compressors that are exposed to bad weather, oil and the kind of rough treatment that would obliterate a bar-code label.

In addition to simple asset tracking, the advantage of the button technology is the ability to write onto the chip every time maintenance is performed for that piece of equipment, Willoughby said. "You can change the information content of that button at will and at essentially zero cost. With bar codes, you have to change the label," Sharp added.

The pioneer of the button business is Dallas Semiconductor Corp., a specialty chip maker in Dallas that introduced its Touch Memory buttons in July 1991. Several other vendors sell handheld read/write devices for the Touch Memory buttons (see chart below). For example, System Integrators, Inc. in Chesterfield, Mo., markets a pen/probe that plugs into the GridPad, a pen-based computer from Grid Systems Corp.

The Touch Memory buttons are powered by an internal battery that lasts 10 years and can withstand temperatures from minus 4 to 158 degrees Fahrenheit. Secure versions can be protected by a password.

In March, Dallas Semiconductor was joined in the button market by MacSema, Inc. in Albany, Ore. MacSema's brass buttons are made with erasable programmable read-only memory chips that do not need an internal battery — the power comes from the data reader — so they can retain data longer and survive more severe temperature ranges.

"If you're dealing with outdoor environments, unheated warehouses or high-temperature industrial processes, the batteries become a real liability," Sharp said. However, MacSema's buttons are 50% more expensive.

For information systems managers, the challenge will be integrating buttons with mainstream computer systems. A few vendors offer the ability to upload the data captured from the buttons into a personal computer via a special docking station or an RS-232 serial interface.

IS managers used to dealing with central databases will have to learn a new way of thinking: With memory buttons, the information is very widely dispersed and not easily managed.

"The hardware integration issues are easy. But the software issues about how to manage that distributed data and how to back it up and how to keep it coordinated when multiple people need access to it — those are real tough issues that need to be solved," Sharp said. "And that is what IS managers get paid big bucks to do."

The vendors

Vendors of memory button systems include the following:

- **Cansec Systems Ltd.**, Mississauga, Ontario.
- **Control Module, Inc.**, Enfield, Conn.
- **Dallas Semiconductor Corp.**, Dallas.
- **Dynasys Technologies, Inc.**, Clearwater, Fla.
- **MacSema, Inc.**, Albany, Ore.
- **System Integrators, Inc.** Chesterfield, Mo.
- **Videx, Inc.**, Corvallis, Ore.

CW Chart: Michael Siggins

Amazing computing discovery: 3.1 is less than 2.0.

You don't have to be a whiz at math to figure this one out. When it comes to running Windows™ applications, OS/2 2.0* gives you more than DOS 5.0 plus Windows 3.1. But that's only part of the equation.

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Preemptive multi-tasking of Win apps	YES	NO
Crash protection	YES	NO

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*In Canada, call 1 800 465-7999. Tests conducted by NSTL. System under test is a PS/2 57SX w/4MB RAM and an 8513 VGA display. Under Windows 3.1, applications were loaded and/or executed from the Windows 3.1 Program Manager. Under OS/2, applications were also loaded and/or executed from the Win-OS/2 Full Screen Program Manager. Both Windows 3.1 and Win-OS/2 use a disk cache of 64KB. †Word processor spellcheck: The time required to spellcheck a document with no spelling errors. Open the WordPerfect for Windows 5.1 document entitled "macro.doc". Select TOOLS from the menu bar, then select SPELLER. Select OPTIONS from the SPELLER menu bar, and deselect all of the options. Click OK. Test was timed from the click until the user regained control of the application. "Macro.doc" contains 21 pages and is 47,455 bytes. ††Word Processor Print: The time it took to print a word processing document. Open the AmiPro 2.0 document entitled "printest.sam." Select FILE from the menu bar, then select PRINT. Select FROM page 1 to 1 and click OK. The test was timed from the click until the first page completed printing on the printer. Windows 3.1 used the IBM LaserPrinter 4029 PS17 PostScript printer driver shipped with the Windows 3.1 software package, and Win-OS/2 used the IBM 4029 v21 (17 font) PostScript printer driver shipped with the OS/2 2.0 Operating System using LPT1.OS2. NSTL makes no warranties, express or implied, as to results to be obtained by any person or entity from use of the services or the results thereof, or any information or data included therein. NSTL makes no express or implied warranties of merchantability or fitness for a particular purpose or use with respect to the services and/or results thereof, or any information or data included therein. NSTL makes no recommendation or endorsement of any product. IBM and OS/2 are registered trademarks and OS/2 Crash Protection is a trademark of International Business Machines Corporation. All other products are trademarks or registered trademarks of their respective companies. © 1992 IBM Corp.

EDITORIAL

Playing hardball

Professional athletes competing in team sports really have it made. They negotiate a salary — often well into seven figures — and then go out and play ball. Should they happen to play particularly well, they clamor to sit down again and do something distinctly American — they *renegotiate* for a better deal.

The beauty of this arrangement from the ballplayer's point of view is that it is a one-way street. Should the athlete have a dismal season, like most any one of the Boston Red Sox this year, for example, the team ownership has no right to sit the player down and renegotiate a lower salary commensurate with performance.

Ahhh, if only it were so in the business world.

Guess what? A growing number of users who have outsourced parts of their information systems operations have taken a page from the athletes' handbook and have renegotiated some of those long-term contracts signed in the past few years.

Speaking at his own outsourcing conference last week, The Yankee Group founder Howard Anderson cited a number of factors contributing to a kinder, gentler negotiating environment. For one thing, users are entering a new generation of outsourcing — what The Yankee Group calls "smartsourcing." It is characterized by users taking a more selective approach to outsourcing while maintaining a relatively high level of control over those parts of the operation turned over to the vendor.

Anderson labeled outsourcing heretofore as a "one-trick pony" that targeted cost-containment primarily, and he added that outsourcing has "proved to be the canard it is." While the outsourcing providers might well disagree with Anderson, this increasingly selective outsourcing coupled with growing user wariness is resulting in vendors' willingness to sit down at the renegotiating table.

As one major outsourcing provider told me, "The users are just a lot smarter and more demanding, and we have no choice but to follow their lead. We've got to show them a lot more added value than just saving money. We've also got to build contracts that are flexible enough to respond to the business environment itself."

In the final analysis of this situation, we have yet another expression of the ongoing empowerment of the user. To date, the manifestations of this empowerment have included more user-amenable software licensing, much more aggressive large systems hardware pricing and now the ability to renegotiate long-term outsourcing contracts.

Kind of like when a so-so ballplayer unexpectedly hits 35 home runs in a season.

Bill Laberis

Bill Laberis, *Editor in chief*

LETTERS TO THE EDITOR

No place for government intervention

It would be a sad day for the vitality of information in the U.S. if David H. Rothman's proposal ["Information access for all," CW, July 6] came to pass.

Rothman envisions a beautiful idea — electronic libraries. But then he proposes getting the government's nose into the tent with a tax on televisions to finance purchasing the computers and paying for instructors.

We might address the moral issue first: What right do people who want to access books through computers have to do so at the expense of people who prefer to watch television?

Second, having the government finance the Tele-Read concept would mean letting the government control it; this would inevitably lead to either a direct government monopoly on downloadable libraries or heavily regulated public utilities.

We should be lobbying not for government subsidies but for a governmental environment that will not block the way of experimentation and innovation.

Gary McGath
Penacook, N.H.

.....

I was appalled at David Rothman's recommendations.

Sure, increasing computer literacy and universal access to on-line information are swell goals. But it never ceases to amaze me that some people in the information business just don't get it. We want digitized literature? Require it by law!

Gee, just imagine how much more successful companies such as Apple and Microsoft would have been if only they'd had government subsidies and preferential treatment when they were starting out!

Richard Knudson
The Information Management Group
Chicago

Virus book unworthy of publication

In the article "Virus fighters fume over little black book" [CW, June 29], experts reacted to the ethics of the publication of Mark Ludwig's book, which contained real virus code.

The publication of viruses is reprehensible, in part because the author cannot control how the virus will behave in the population at large.

Indeed, he cannot know enough about the population to even begin to predict.

It is still more reprehensible because knowledge of a virus is essentially sufficient for its use — nothing else is required.

Ludwig's action is motivated by nothing more than greed; he deserves the censure and notoriety that will surely be his.

We are all somewhat poorer for the actions of Ludwig and his publisher. Even terrorists do not poison the well.

William Hugh Murray
New Canaan, Conn.

Readers deserve thorough research

The general rule is that in mixed company, one should never discuss religion, politics or word processors. We all have a position — deeply entrenched if not well-thought-out — and little or no tolerance for someone else's. Hence, your Product Spotlight on new word processors [CW, July 20] took on an ambitious and emotional subject.

If you are going to take a stance, then you should at least be thorough in your research and hands-on product testing.

In three separate places in the article, Alan Radding swoons over Ami Pro's ability to find the recipient's address in a letter and create an envelope and points this up as a differentiating characteristic of the product.

Even the most casual perusal of Microsoft Word's Toolbar (or documentation) would have demonstrated that it has precisely the same feature.

My point is not that the packages are identical or even equal, but that incomplete research can create artificial differences on which your readers may base purchasing decisions.

Irwin L. Goverman
Deloitte & Touche
Los Angeles

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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CIOs, get out of your cocoons

TIM BRYCE

It has often been said that there should be two presidents of the U.S.: one to deal with politics and another to tend to the true affairs of government.

The same could be said about chief information officers. Although they should be tending to matters involving the state of information systems, they are often too preoccupied with politics and gamesmanship.

A CIO is supposed to be the focal point for a company's information resources, acting as both chief architect and information broker. Although the position often comes with much pomp and circumstance, all that is for naught if the CIO cannot effectively tend to this pivotal role.

Wearing many hats

In order to do the job properly, a CIO must deal with a wide spectrum of people and situations, not all of them pleasant. He has to find answers for end users concerned about the status of their development projects or problems with existing systems; deal with technicians who argue over tactics of implementation; listen critically to vendors marketing the latest technical panacea; and justify expenditures to accountants.

Sound hectic? It is. And that's why CIOs often try to insulate themselves by building an electronic cocoon of voice mail and E-mail. By coordinating these two technologies and using them as screening devices, it is almost possible to avoid human contact altogether.

Of course, the elusive CIO doesn't want to avoid *all* contact — just contact that draws him into the day-to-day fray and distracts him from hobnobbing with the corporate brass. As problems rise through the organization, the CIO simply adds another layer of management to deal with the problems.

The CIO's final sentry is his secretary. Instead of serving as an expediter, for many CIOs, the secretary has more of a "pit bull" role, with explicit orders to keep anyone from disturbing the boss.

In addition, CIOs frequently speak with forked tongue. Although they may balk at technical discussions with their own staffs, some CIOs love to overwhelm executive management with their technical verbosity.

Paul Fuch

Conversely, they dazzle the technical staff with management jargon, discussing the "global impact" and "bottom line strategies." As a consequence, the CIO fails miserably as translator between management and the technicians. He plays a different part for each group, making sure neither group can understand (or attack) his grandiose ideas.

Insulated by E-mail and voice mail, protected by platoons of managers and his diligent secretary and lulled by his repetition of catchphrases, the CIO can finally relax. That sense of peace and security is false, however. Executives and users want to know why their needs aren't being met, and IS professionals are milling around in confusion, waiting for their marching orders.

Without proper management, chaos will reign, and the CIO's tenure will be brief. How can an IS department plan for the future if there is a revolving door at the top?

CIOs must shed their insular layers and become accessible to their own people and executives. Only then will IS be synchronized with the goals of the business.

Bryce is a management consultant in the Tampa Bay area of Florida and co-author of the book, ***The IRM Revolution: Blueprint for the 21st Century.***

The business of immigration: Talent should be the passport

MITCHELL GORSEN

Our immigration laws should be liberalized to allow more highly skilled foreigners into the U.S. on a permanent basis.

Today, only 1 in 10 foreign workers is permanently admitted to the U.S. based on skill, and there is an annual cap of 65,000 temporary nonimmigrant professionals. We need to lift the ceiling.

Many large technology companies have cut back operations and laid off workers, particularly in the area of computer hardware, but a long-term labor shortage remains.

Lagging interest

Last year, UCLA surveyed 200,000 incoming freshmen in the U.S. and found that less than 1% expressed an interest in computer programming. Ironically, the demand for software professionals between 1990 and 1991 rose over 10%. These trends suggest that the pipeline to America's high-tech talent pool is beginning to run dry.

Replenishing the labor pool is a critical issue for the U.S. technology industry. Over the long term, this will require greater interaction between industry and academia and an educational system that places high priority on explicit technical expertise such as software engineering or factory automation.

HIGH-TECH TALENT GAP

In the next 5 to 10 years, however, the talent search must be conducted on a global scale and supported by federal government policies that promote the immigration of highly skilled technical professionals.

The U.S. is not the only post-industrial nation facing a high-tech talent gap. Immigration is rapidly becoming a matter of national competition.

Despite the technology gains immigrants have already brought to America, current U.S. immigration policy is not enlightened. Rather than expedite the entry of human capital, the immigration system does the opposite; it is an antiquated machine fueled by a mix of country quotas, ceilings, excessive forms and fees, unreasonable documentation and delays.

Any agenda for renewed U.S. economic competitiveness must include a new set of policies governing the immigration of high-skill, high-tech professionals. The revamping should support:

- Dramatic increases in the numerical and procedural preferences available for professionals, executives, investors and designated shortage occupations.
- Expedited processing of computer-generated and stored forms and documentation.
- Simplified forms electronically linked to an integrated information system shared by the Immigration and Naturalization Service, the Department of State, the Department of Labor and other interested agencies.
- Equitable and reasonable compensation of temporary foreign workers and visitors and the elimination of loopholes that allow wage and salary levels set by foreign employers at predatory levels.
- Enactment of the immigration reciprocity provisions in the pending North American Free Trade Agreement.

Immigration policy is one of the lightning rods of American politics. Liberalization even has its critics within the technology industry. These are often professional services firms, which point to systematic abuses of the visa process, particularly where foreign-based employers import highly skilled workers into the U.S. but pay them at sweatshop rates.

That's a problem, but it can be addressed easily through changes to the federal regulations governing the visas of visiting workers.

Our competitive future depends on our ability to design and develop high-tech, high value-added products and services. We can't do this without a rich pool of technical talent and innovation.

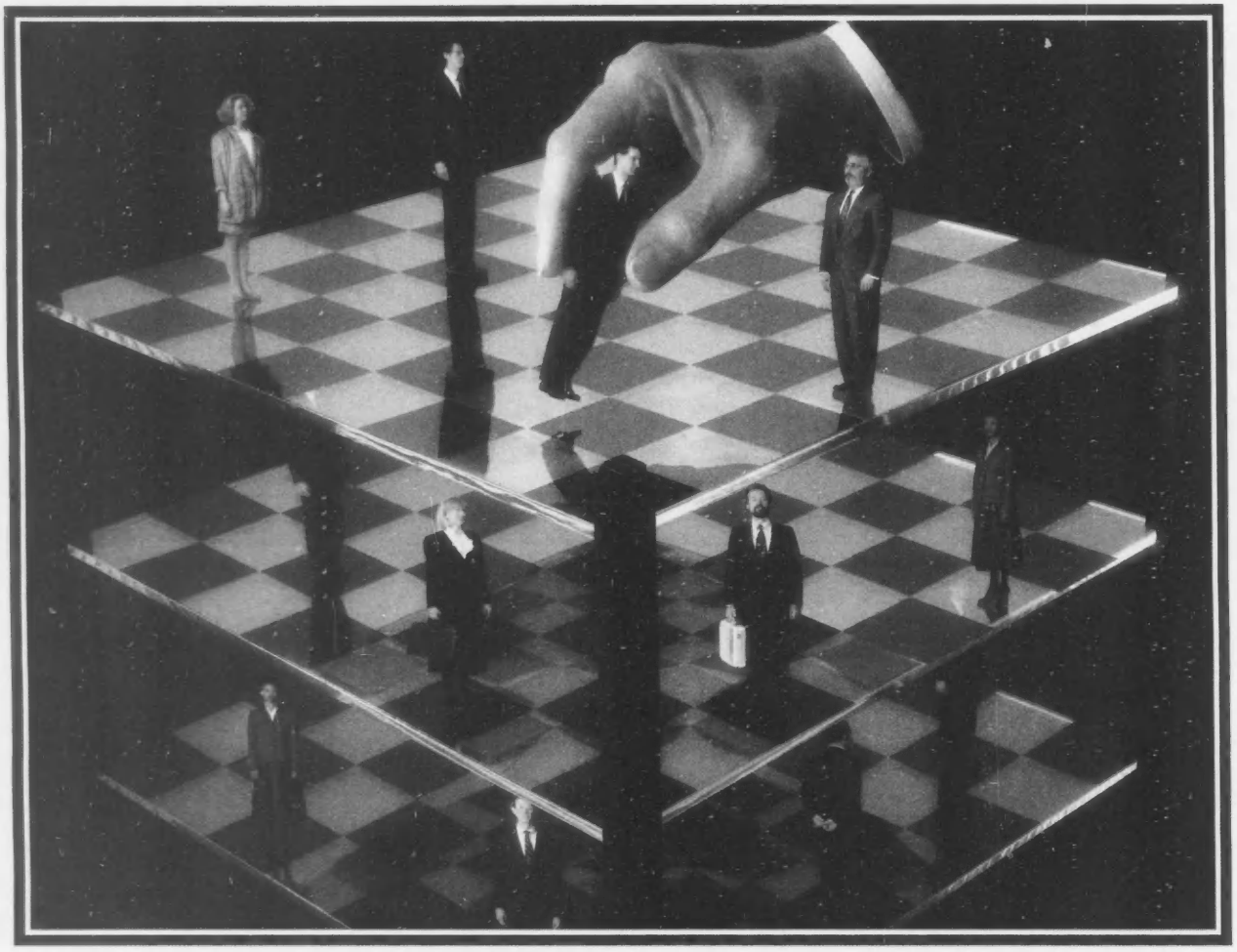
With those resources, however, we can create technologies that redefine the status quo and create wealth, jobs and opportunities for everyone.

America's great democratic traditions and personal liberties are a powerful force in attracting foreign professionals. That's a competitive advantage.

It's time we recognized that fact and put the advantage to work for us.

Gorsen is vice president of the Information Technology Association of America.

YOU CAN'T KEEP THE COMPETITION IN CHECK UNLESS YOU ANTICIPATE ALL THEIR MOVES.



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Robust AST announces broad price reductions

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — In almost a single breath, AST Research, Inc. last week announced record sales and profits for fiscal 1992 and cut prices across most of its product line, including up to 47% off its notebooks.

Mike Morand, vice president of marketing at AST, said in a prepared statement that the company made the price cuts to compete more effectively in the current environment of vicious price cutting.

Industry observers said the price cuts were not as impressive as they might sound, particularly since AST's major price cuts came on their notebook products, the Intel Corp. 80386SX-based Premium Exec line. The lowest priced Premium Exec is now $1,395 with a 40M-byte hard drive. Prices overall were cut between 42% and 47% and between 12% and 20% on its color notebooks. Its lowest color notebook price is now $2,895.

Clearance sale?

Most of "those notebooks are old products at this point, so it looks like they're just pricing them for a close-out sale," said Bruce Stephen, director of personal computer hardware research and pricing at International Data Corp. in Framingham, Mass. "I think the whole announcement is a precursor to doing a new product blitz."

It has been rumored that AST is readying a line of new products for release in the fall.

The price cuts did give AST some products that clearly are competitive with new low-cost lines from vendors such as Compaq Computer Corp. For instance, the price of its 25-MHz 386SX-based Bravo 3/25s dropped 31% to $895. But prices on the rest of the Bravo line fell between 11% and 29%. AST cut prices on its Power Premium line up to 17%.

The company reserved its biggest price cuts on nonportables for its servers, which now sport slight enhancements and 14% to 30% lower prices.

AST also cut prices on its monitors and storage option kits.

AST was nearly the last major vendor to cut prices in the wake of Compaq's sweeping announcement of the Prolinea and Deskpro/I lines recently. Analysts said AST's earnings were likely to slip.

AST reported profits of $68.5 million on sales of $944.1 million for fiscal 1992, up from $64.7 million on sales of $688.5 million in 1991. For the fourth quarter, AST saw profits drop to $18.6 million from $20.4 million in the year-earlier period, though sales rose from $211 million to $266.3 million.

Report writing made simple

End users can process host data at the desktop with Intelligent Query tool

BY CHRISTOPHER LINDQUIST
CW STAFF

At one time, "ad hoc report" was something of a contradiction in terms. Collecting, processing and formatting data were jobs for information systems departments, not end users. A variety of easy-to-use report writer/querying tools are changing that.

One such tool is the recently introduced Intelligent Query Version 3.0 from IQ Software Corp. in Norcross, Ga. Meanwhile, a second vendor, Business Objects, Inc., claimed to provide similar capabilities for personal computer users seeking to access Oracle Corp. databases (see story below).

Intelligent Query allows users to gather and format data using pop-up menus and a screen painter. A wide range of operating platforms — DOS, Unix and VMS — as well as more than 60 database formats — including Oracle, Novell, Inc.'s Btrieve and Fox Software, Inc.'s FoxBase — are supported, allowing users transparent access to a diverse amount of information across an enterprise.

Gary Alexander, manager of accounts payable systems at General Electric Co.'s Corporate Information Technology Group, uses Intelligent Query to allow end users in accounts payable to utilize server-based data rather than having to go to a mainframe — and expensive mainframe time — for the information. Going to the mainframe required the use of querying tools beyond the grasp of most end users.

CW Chart: Michael Siggins

Alexander was looking for a query tool that would allow him to treat multiple physical databases as a single logical file. After looking at a half-dozen different products, he settled on Intelligent Query. "This was the only product that allowed us to do that," Alexander said.

Another user, Clark Lennert, president of Micro Electronic Data Systems, Inc., was particularly impressed with Intelligent Query's ease of use. "It looked too easy to be true," he said, "so I evaluated several other products, and [Intelligent Query] came out on top as far as ease of use and [support for] multiple platforms."

Users generate reports with Intelligent Query by navigating a series of menus using arrows and the Enter key to choose fields. Once retrieved, data can be cut and pasted to create a custom report in the desired format.

Simple bar graphs and histograms can be created and added to the reports. Information can also be exported in various formats. Intelligent Query is available at a starting price of $500 for the DOS version and $2,000 for the VMS version.

Query package hides SQL complexity

BY JEAN S. BOZMAN
CW STAFF

MENLO PARK, Calif. — A 2-year-old European end-user database query package arrived in the U.S. this summer, promising to hide SQL complexities from end users. Business Objects, Inc., a firm that opened offices and introduced the product here, provides an icon-based interface on personal computers.

The BusinessObjects package, which runs against the Oracle Corp. relational database, is intended for users of Microsoft Corp.'s Windows. Its icon-based screen allows users to ask questions of Oracle databases and even to make better use of Oracle's financial application packages. It also allows them to "navigate" through the database without outside help.

However, information systems programmers must help end users set up the "objects" on the screen. "IS' responsibility is to create these objects and to deliver them to the end user," company President Bernard Liautaud said. "The IS person turns the raw data into meaningful information." In effect, the users are assembling "views" of the underlying database based on building blocks.

The firm, with 300 user sites, is porting the package to other relational databases, including Digital Equipment Corp.'s Rdb and IBM's DB2. Support for interfaces such as the Open Software Foundation's Motif for Unix, IBM's OS/2 Presentation Manager and Apple Computer, Inc.'s Macintosh is also planned.

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Make way for a better map

Travelers' desktop mapping system helps match doctors and clients

BY MITCH BETTS
CW STAFF

HARTFORD, Conn. — For The Travelers Corp., with 70,000 physicians, 11,000 hospitals and more than 1 million insured people to track, the days of wall maps and colored pushpins are gone.

Today, the big health insurer is using a desktop mapping system to get a picture of the geographic distribution of its preferred physicians and hospitals, as well as the location of the people they are supposed to serve.

The primary use of the mapping system is to compare the former to the latter, according to William Rohrer, manager of technology products at Travelers' managed care and employee benefits operation.

The goal is for Travelers' network of health care providers to closely match where the clients' employees live or work. The maps are used as a marketing tool to show prospective business clients that using Travelers-affiliated doctors will not be a burden for employees.

Visual advantages

The same thing could be accomplished with computer printouts, but business executives like visual presentations better. "Maps are a powerful way to display complex relationships between geographic locations without having to wade through mounds of tabular reports," Rohrer said.

If the maps show that Travelers' managed-care network has some geographical gaps — areas where employees are too far from a physician — then Travelers knows it needs to sign up some doctors in that area, he explained.

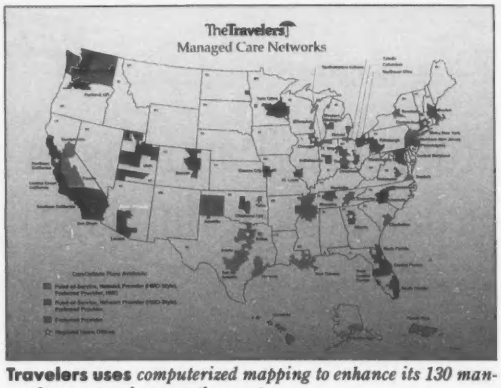
The rule is that employees should not have to travel more than 30 miles or 20 minutes to reach a Travelers-affiliated physician or hospital.

The mapping system runs on Intel Corp. I486-based computers located at Travelers' five regional offices. The systems currently run MapInfo for DOS 5.1, a desktop mapping package from MapInfo Corp. in Troy, N.Y., but Rohrer said Travelers is migrating to MapInfo for Windows 2.0.

Two critical success factors for the system are that the 486 personal computers have big hard disks (120M bytes) to hold the databases and 8M to 10M bytes of random-access memory to quicken the repaint of the on-screen maps. A third factor is that the process of geocoding — that is, assigning longitudes and latitudes to the client's database of employee addresses — is handled by a mainframe system because doing it on a PC was too slow, Rohrer said.

At headquarters, Travelers has a compact disc of digitized street maps from the U.S. Bureau of the Census, which can be downloaded by the regional offices whenever they need to create a map.

In the future, Rohrer said, the desktop mapping system could be used to analyze demographic trends in health care and monitor Travelers' workers' compensation business.



Travelers uses *computerized mapping to enhance its 130 managed care networks across the country*

BOARDWATCH

Chris Lindquist

OS/2 gains in systems war

• **Not-so-quiet on the operating systems front.** With all the claims, counterclaims, claim jumping and disclaimers going on between Microsoft and IBM, it's just about impossible to tell which one is really doing better in the operating system war — well, armed conflict. However, if amount of traffic on the bulletin boards is any indication, interest in OS/2 is on the rise.

A few months ago, the ratio of Windows to OS/2 messages on several systems was often 10:1 or more. That gap is closing. Of course, some would argue that the bulletin board networks only attract the upper percentage of power users, who don't represent the population of PC users.

That may be the case, but if you ever wonder what influence power users have on the market, just talk to IBM about the PC, Quarterdeck about Desqview and Intel about the 80386. They were all power user "toys" at one point, too.

• **Ctrl-Alt-Destroy!** One rather macabre-minded Usenet reader posed the question of whether anyone had ever been killed by a computer, excluding electrocution. The question was raised after another user reminisced about the "scary" 729- and 2400-style IBM 9-track tape drives.

Apparently, the user heard a crash one day and barely avoided being hit by a several-pound tape reel that had broken loose during a high-speed rewind. It's another good argument for progress. The worst computer-related accident I've ever had is a paper cut from a floppy disk label.

• **Squeaky wheels get the grease.** Several bulletin board users have said that they have been sent the recently released Ami Pro Version 3.0 as a reward for submitting bug reports about the previous version to Lotus' technical support line. The users all seemed excited and pleased with the special treatment, though one kept a healthy skepticism. "I've carefully saved [Version 2.0] so it's available later, in case [Lotus] drops the ball," he said.

■ **Build-it-yourself bug.** Do you have a consultant who keeps telling you a bug "can't be fixed?" Maybe there's a reason. A bulletin board user/mainframe consultant in Canada said his firm had a client who wouldn't allow it to bring down a memory region on a certain system in the middle of the day — something the consultant deemed a necessity.

So what did the firm do? "We simply wrote a small transaction that ate memory and quickly crashed the region," he said. When the client asked the consultant to fix the bug, the crafty consultant informed him that the bug was "intermittent" and not worth tracking down. I bet IS managers have nightmares about things like that.

Any bulletin board-related tips, ideas or tales to tell? Know any boards I should be checking out? If so, reach me at Usenet address chrisl@unixland.natick.ma.us or on CompuServe at 72360,2005.

HELP LINE

IBM OS/2

Part of a series of user tips provided by personal computer software vendors, based on questions commonly asked of their customer support personnel. This week's tips deal with IBM's OS/2 2.0.

Q Do I need to reformat my hard disk to install OS/2 2.0?

A No. If you have any version of DOS or OS/2 already on the disk, you may choose not to format during installation. But you will only be able to use the "FAT" file system on that drive, as installing High Performance File System (HPFS) on a FAT drive requires reformatting.

Q I have Microsoft Corp.'s Windows on my system. I want to run OS/2 2.0 and still use Windows applications. Do I need to keep Windows installed? Also, I have DOS programs I still use. Do I need to keep DOS on, too?

A No. You can save disk space and run more efficiently by using the copy of Windows code (called WIN-OS2) from OS/2 2.0. OS/2 2.0 has DOS built right in, so you can remove DOS from your disk and still run DOS programs.

Q I have an Intel Corp. 80286-based machine but want to run OS/2 2.0. Can I use an AOX, Inc. card to replace the processor and run OS/2 2.0?

A Yes. OS/2 2.0 will run on systems changed to an Intel 80386SX or higher using AOX cards, provided the AOX card is up-to-date. If you have any problems running OS/2 2.0 with an AOX card, you can contact AOX and ask for the latest "flash-prom" update for your card.

Q If I accidentally make a copy of a template, or if there is a folder or object that is unshreddable, how can I get rid of it?

A Folders and templates are represented in the OS/2 file system. You can use a command prompt to get rid of these unwanted items. Change into the "OS!2 2.0 Desktop" (or OS!2_2.0_D) if you are on FAT) directory. Folders are represented as directories and templates as files.

Simply traverse the directories to get the right folder, then remove the directory (the RD command) for the unshreddable folder or the Delete command for the unshreddable template. Remember that to remove a directory, it must be empty.

IN BRIEF

Sharpen your shop

■ **Norton Publishing Co.** last month announced it was shipping OnTheJob Employee Scheduling Software for Microsoft Corp.'s Windows. OnTheJob schedules employees by matching their skills, availability and preferences, thereby reducing overtime costs, improving schedule quality and sharpening handling of crisis situations. The suggested price is $495.

■ **Aox, Inc.** announced its latest upgrade boards. The Stax SX 25-MHz and MicroMaster 486SX 25-MHz allow IBM Micro Channel Architecture-based Personal System/2 users to bump their Intel Corp. 80286- and 80386-based boxes up to 80386SX and I486SX levels. The Stax SX lists for $495. The MicroMaster is priced at $1,600.

■ **Adaptec, Inc.** and **DP-Tek, Inc.** announced TrueRes image-enhancement technology called ASICs that will improve the quality of laser printers' output. Adaptec will use the technology in its ImageCard controllers, allowing printers to quadruple resolution and improve grey scale and smoothing capabilities.

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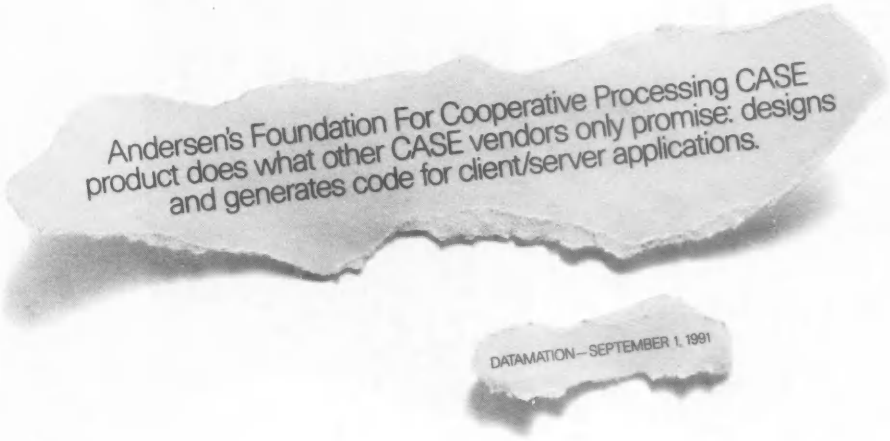
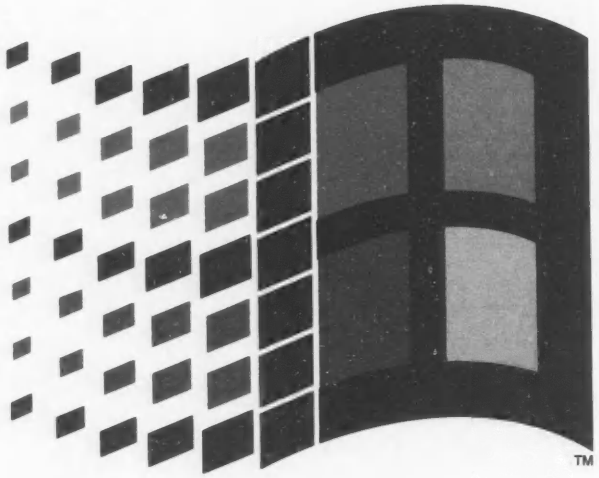


Considering how much has been written about CASE tools for cooperative processing, we thought you would appreciate an executive summary.

ANDERSEN CONSULTING
Software Products

For the full story on FOUNDATION for Cooperative Processing including case histories, call 1-800-458-8851. Outside the U.S. or Canada, 1-312-507-5161.

9 of the top 10 PC manufacturers make PCs easier to use.



MICROSOFT® WINDOWS™

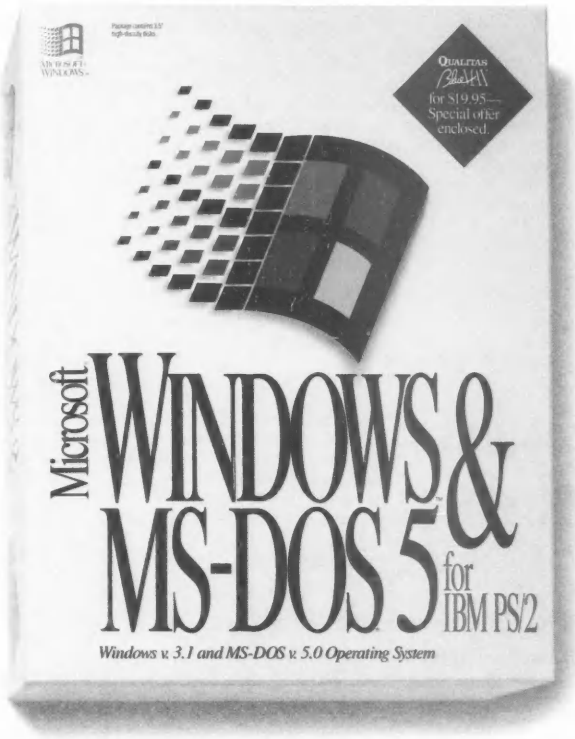
These days, just about every PC manufacturer out there ships the Microsoft® Windows™ operating system with its PCs. That includes 9 of the 10 largest PC makers worldwide: ACER, AST Research, Compaq, NEC, Olivetti, Packard Bell, Tandy, Toshiba and Zenith Data Systems.*

Why? Because PC manufacturers know that people want the ease of use that Windows has to offer. In fact, to make it even easier for you, many of them preinstall Windows. Just look for the Microsoft Windows Ready-to-Run logo on your PC. It means that virtually all you have to do is plug in your new computer, and you're ready to run.

If you're getting a PC from that other manufacturer in the top 10, we've got

*Source: Dataquest 1991 Top 10 Companies' factory unit shipments of personal computers based on Intel® processors. **Suggested retail price. Reseller prices may vary. Offer good through 12/31/92. Offer good only in the 50 United States. © 1992 Microsoft Corporation. All rights Corporation. IBM and PS/2 are registered trademarks of International Business Machines Corporation. Intel is a registered trademark of Intel Corporation. All company names are trademarks and/or registered trademarks of their respective manufacturers.

Now you can make your new PS/2 just as easy.



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For information on participating resellers, give us a call at (800) 541-1261, Department HH5.

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Toshiba updates Dynabook

Portable features word processor, spreadsheet, DOS software in ROM

BY LORI VALLIGRA
IDG NEWS SERVICE

TOKYO — Toshiba Corp. has introduced a new version of its popular Dynabook portable computer that includes word processing, spreadsheet and DOS software in a read-only memory (ROM) chip, reportedly making it easier for first-time computer users or others unfamiliar with DOS-based computers to more easily acclimate themselves to the systems.

The new Dynabook EZ includes Japan's best-selling word processor, Ichitaro Dash from Just System Corp., as well as Lotus Development Japan Ltd.'s 1-2-3 spreadsheet and DOS, in ROM. Toshiba has already started marketing the computer in Japan.

ROM-based programming has been a goal of Lotus Japan President Saburo Kikuchi, who predicted in an interview several years ago that home and personal computers would not become widely popular unless ROM-loaded software made them easier to use. This would apply especially for those people who are not computer-literate.

When the Dynabook is turned on, an icon-based menu appears, and users can select functions from the screen.

The computer, with an operating system, applications and utilities for frequent tasks such as formatting floppy disks, is priced at $1,860.

The programs in ROM reportedly operate faster than conventional software loading via floppy or hard disk drives. It also is intended to help those who are not technically inclined to avoid the arduous task of loading new software.

A Toshiba spokesman said almost half of the inquiries to hardware and software companies in Japan involve problems with installing software.

Toshiba added that with ROM, users avoid the risk of buying programs with computer viruses in them.

One drawback to ROM, according to analysts, is that it will not be upgraded with new features in successive software versions.

The Dynabook EZ is based on a 16-MHz Intel Corp. 80386 microprocessor and has 2M bytes of standard memory, expandable to a maximum of 10M bytes.

ONE DRAWBACK to ROM, according to analysts, is that it will not be upgraded with new features in successive software versions.

Space allocation

The ROM includes 64K bytes for the BIOS, 1M byte for the Japanese Kanji ideograph font, a 512K-byte dictionary, 512K bytes for MS-DOS and 2M bytes for the Ichitaro and Lotus programs.

The system has one 3½-in. floppy disk drive and a 40M- or 60M-byte hard disk drive option. The optional drives are priced at $800 and $960. The display is a monochrome LCD.

The system runs on either AC or a battery, although the battery's life is only 1.8 hours. The system weighs 5.28 pounds, including battery pack.

Toshiba has ambitious plans for the system: The company said it aims to sell about one million Dynabooks in the first year of sales.

HP reaches agreement to emulate Macintosh

Plans joint marketing of Xcelerated's Liken

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. announced last week that it has entered a joint marketing agreement with a San Diego-based software company under which HP is offering an Apple Computer, Inc. Macintosh emulation program for HP workstations.

The agreement with Xcelerated Systems, Inc. calls for both companies to market Xcelerated's Liken package for the HP Apollo 9000 Series 700 workstation family.

The companies are funneling sales through Xcelerated's distributor and reseller channels, an Xcelerated spokesman said.

Building the bridge

The vendors are positioning Liken as a means to help Macintosh users migrate to HP workstations and to permit HP workstation users to run software not currently available to them, such as Aldus Corp.'s PageMaker and Microsoft Corp.'s Excel, according to analysts.

Liken users would load the program onto the workstation, which would require an X Window System software system, the 6.0 or later version of the Macintosh operating system and 16M bytes of memory. Liken would then enable users to run shrink-wrapped Macintosh applications.

Performance would be approximately that of a Motorola, Inc. 68030-based Apple Macintosh IICI, according to an Xcelerated spokesman.

Xcelerated said the software will be available this month, priced at $695 for a single-user fixed license and at $895 for a floating license. The company is also selling 10-packs of fixed licenses for $5,980, with 10-packs of floating licenses priced at $7,495.

The HP agreement marks Xcelerated's second Liken accord with a Unix workstation vendor. In January, the software company entered a similar agreement with Sun Microsystems, Inc.

The availability of Macintosh emulation software for HP workstations comes as HP embarks on what some analysts called an onslaught on Sun's dominant position in the workstation business, and should help HP continue to take market share from its rival.

Surge expected

According to Daratech, Inc., a Cambridge, Mass.-based research firm, HP's share of total Unix workstation hardware sales through computer-aided design and manufacturing and computer-aided software engineering resellers will jump from 4.6% last year to 19.9% next year.

By comparison, Sun's share will plunge from 69.1% to 43.9%, the company estimated. Daratech based its predictions on an opinion survey of resellers conducted in June.

About 18.7% of the survey respondents said they believed HP will be the dominant Unix workstation supplier in five years. In a similar survey a year ago, only about 3% expressed the same view, according to Daratech.

By the same token, the number of respondents who said Sun will be the dominant Unix workstation vendor in five years dropped from 49.1% last year to 38.7%.

NEW PRODUCTS

Software application packages

Autodesk Retail Products has introduced the Autodesk 3D Concepts for Windows, a three-dimensional conceptual design software package.

The company's 3-D computer-aided design for DOS and Microsoft Corp.'s Windows interface are incorporated into Autodesk 3D Concepts. A color-coded icon called the Rotation Cube allows users to change the orientation of an object or set of objects. With a visible ground plane feature, the 3-D frame of reference is established, so users can identify the top or bottom of a model at a glance. Autodesk 3D Concepts offers a new 3-D editing tool called Sculpt Mode that lets users add, subtract, intersect and section parts of models.

The product costs $249.
Autodesk Retail Products
11911 N. Creek Pkwy. S.
Bothell, Wash. 98011
(206) 487-2233

PC Publishing, Inc. has announced Success, presentation graphics software for Lotus Development Corp. 1-2-3 users.

Success takes graphics and data from any 1-2-3 worksheet to create slides, speaker notes, handouts or overhead transparencies. The program combines DOS speed with a graphical interface and features dialog boxes, pull-down menus and resizable windows. Success has a viewer feature that allows users to preview any operation at any time. Files can also be previewed before they are imported.

Success costs $159.95.
PC Publishing
58 Charles St.
Cambridge, Mass. 02141
(617) 225-2570

SalesLink Systems has introduced Version 1.2 of SalesLink for Windows.

The product is sales force automation software that includes an agent capability to automate various tasks and complies with Microsoft Corp.'s Windows Pen Computing. Customizable sales process reports can be created via Dynamic Data Exchange links to sales call information stored in a personal information management module. By defining event triggers and actions, the agent capability can be used. When it is defined, the agent can sound an alarm, display a message, launch another application or print a report.

SalesLink for Windows costs $895 per user.
SalesLink Systems
Business and Technology Center
1840 Oak Ave.
Evanston, Ill. 60201
(708) 866-0400

Ares Software Corp. has announced FontMinder, a font organization and management application for IBM personal computers and compatibles running Microsoft Corp.'s Windows 3.1.

The product can organize fonts into lists of obtainable fonts and established fonts. Users can create a font pack containing any number of Adobe Systems, Inc. Postscript Type 1, TrueType or mixed format fonts, according to the company.

All installation and deinstallation is done in one window within FontMinder, and Master Font Library can be printed listing all fonts and font packs by name, weight and format.

FontMinder costs $79.95.
Ares Software
Suite D
561 Pilgrim Drive
Foster City, Calif. 94404
(415) 578-9090

Peripherals

Always Technology Corp. has announced the AL-1000, a high-speed Small Computer Systems Interface (SCSI) adapter.

AL-1000 connects a variety of SCSI devices to the external parallel port of a personal computer.

Fixed and removable media such as optical, floptical, compact disc/read-only memory and tape drives are included. According to the company, the AL-1000 has a parallel-port inquiry scheme that optimizes performance for a broad selection of parallel-port chips.

The adapter can be used with older computers that have unidirectional printer ports and with current high-speed bidirectional and enhanced parallel-port-based computers.

AL-1000 costs $199.
Always Technology
Suite 101
31336 Via Colinas
Westlake Village, Calif. 91362
(818) 597-1400

QMS, Inc. has introduced the QMS 860 Print System.

The product is a high-resolution, reduced instruction set computing-based print system based on the company's Crown multitasking operating system. Features include network and multiplatform connectivity, 600 by 600 dot/in. print engine, 11 by 17 in./A3 paper-handling capability and emulations of industry-standard languages.

According to the company, the printer can connect seamlessly to a variety of hosts or networks.

The base model of the QMS 860 Print System costs $4,495.
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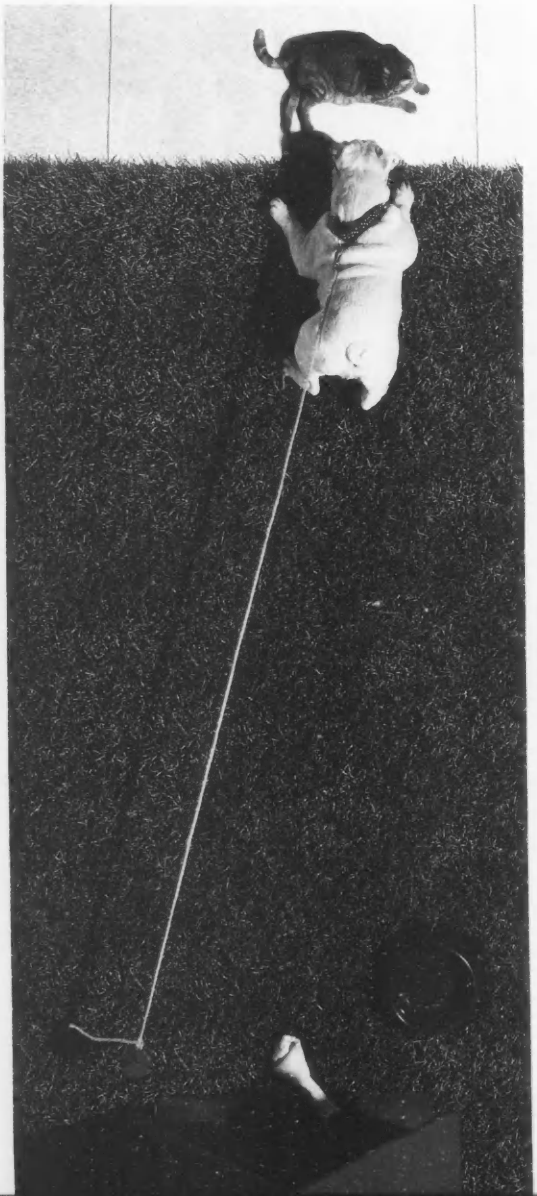
White Paper

NETWORK PRINTERS

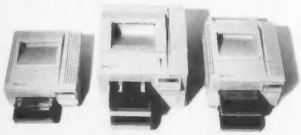


Until now, network printers have had the same fifteen-foot restriction.

With HP network-ready LaserJets, you can put your printers where your users are.

Now you can forget about tethering your printers to some faraway server. Because network-ready LaserJet printers can be placed anywhere along your network. Just plug them in as you would PCs and you're ready to roll.

Since you're putting printers by your users, it's as if you're giving them their very own personal printer. Which means they won't have to travel as far for output. Because they're closer to the printer, they can handle some of the routine maintenance tasks, such as paper loading, themselves. Best of all, you won't have to contend with extra boxes, wires or power cables.



HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX,* Macintosh, and PC operating systems, call **1-800-752-0900,** Ext. 3073 for the HP Connectivity Solutions Guide.

HEWLETT PACKARD

*For operating HP-UX, SunOS and SCO UNIX, $100 in additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries.

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Introduction

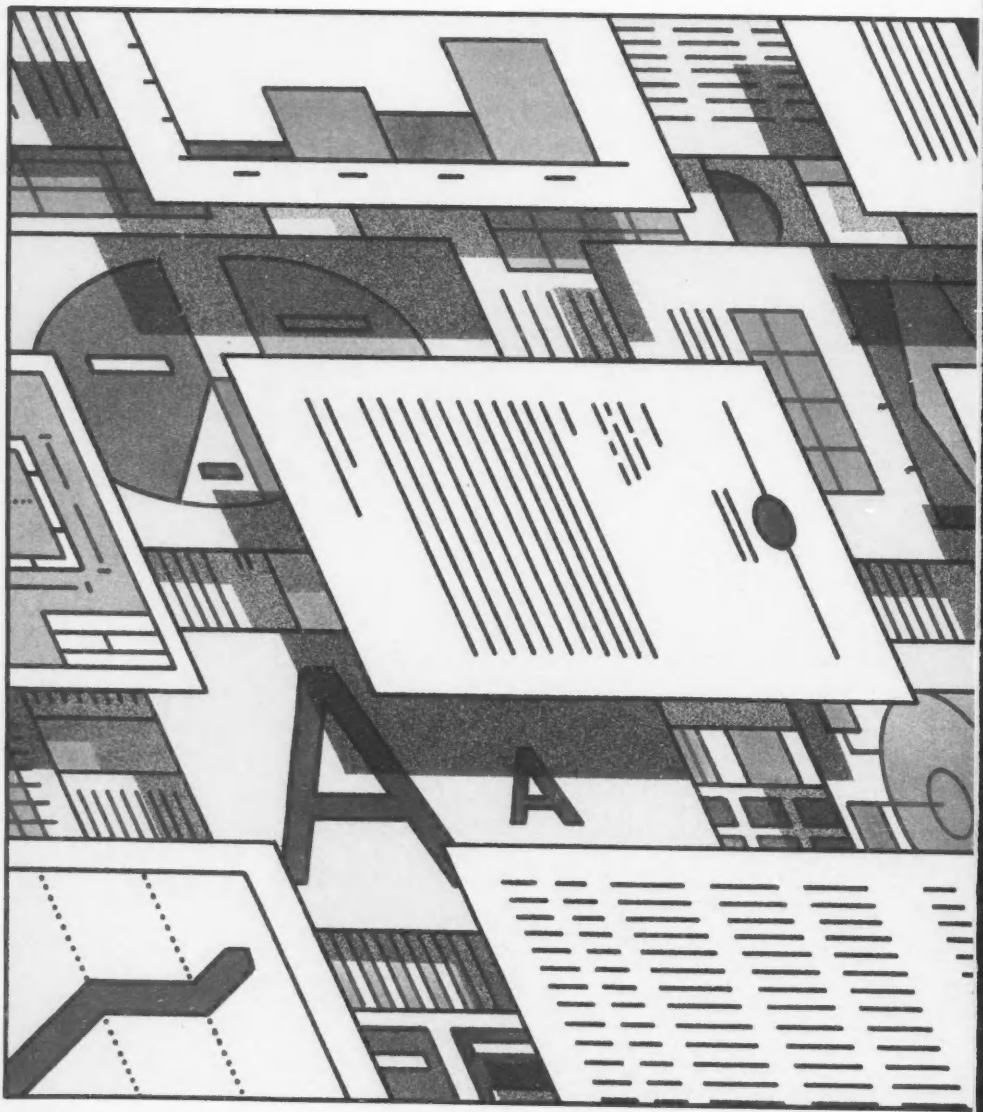
Local area networks have certainly made their impact felt in the computer world. Although some criticize them for their utilitarian applications — they are largely used to link PCs with local printers and storage devices — the fact remains that localizing printer and memory capabilities has vastly changed the nature of computing.

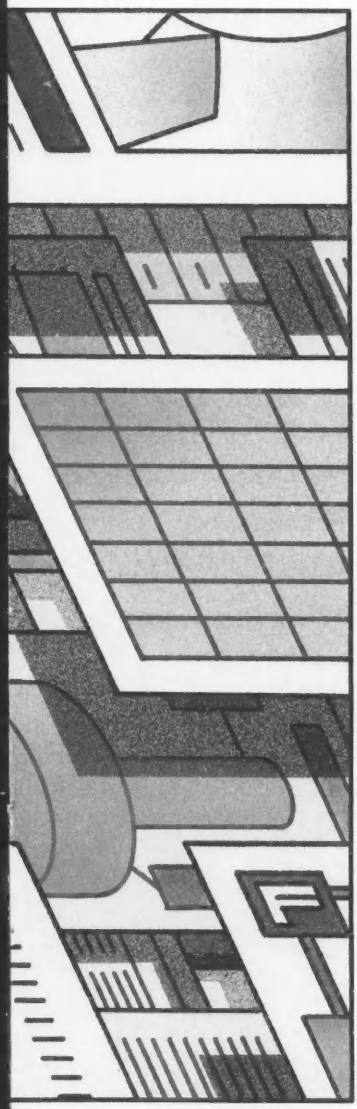
Liberated from the tyranny of centralized, mainframe environments, users have become more productive within departmental workgroups. This local processing trend is strong and growing; IDC research indicates that, by 1996, users believe that 69% of PCs will be attached to LANs. As is frequently the case with technology trends, there is a downside to the great LAN proliferation: integrating printers is a complex challenge for LAN administrators. Despite the printer's importance to users, they are not a top priority for network operating system suppliers. As a result, printer and third-party vendors who make accessories or enhancement products have inherited the challenge of network administration.

Currently, printer interface and software technologies are years away from offering the ability to transmit any print job and have the system intelligently and transparently print it at the closest available printer. Unfortunately, due to the heterogeneous hardware and software environments being connected, solutions tend to be customized for individual problems. This state of affairs will continue for the next three to five years. Until it is resolved, network configurations will fail to maximize printer capabilities.

There are, however, interim solutions that ease the burden of printer administration. Although these fixes will not do the job over long periods of time, the day will come when print management software, which is currently in its nascent stages, will seamlessly accommodate different data streams on LANs.

This White Paper was written independently of the *Computerworld* editorial department
by Angele Boyd, Director of Printer Research,
at International Data Corporation.
For more information on the content of this White Paper, or for information on
International Data Corporation, please call 508-872-8200.
For more information on the White Paper Program, please call 508-879-0700.

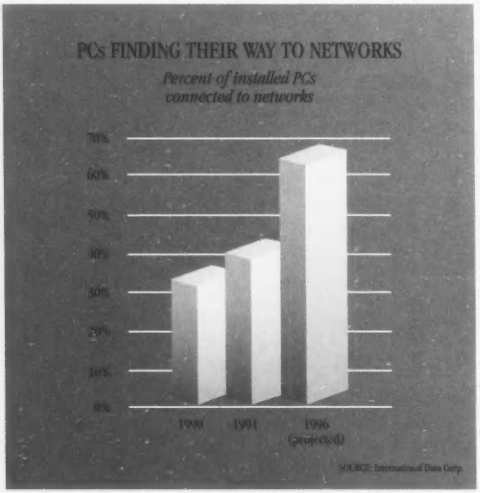




NETWORK PRINTERS

THE RAPID PROLIFERATION OF LOCAL AREA NETWORKS (LANs) AND PRINTERS IS BRINGING THESE TWO PROMINENT TECHNOLOGIES TO A CONFLUENCE THAT WILL INCREASE THEIR UTILITY AND PROVIDE THE COST-EFFECTIVENESS REQUIRED TO JUSTIFY THE GROWING LEGIONS OF DESKTOP COMPUTERS. ■ ALTHOUGH PRINTERS OBVIOUSLY REPRESENT A FAR MORE MATURE TECHNOLOGY THAN DO LANs, LASER PRINTERS ARE EXPERIENCING SIGNIFICANT GROWTH, IN PART BECAUSE THESE PRINTERS ARE FINDING THEIR WAY INTO MORE AND MORE CORPORATE NETWORKS. THIS CONTRIBUTES TO LAN GROWTH, WHICH IS STIMULATED BY THE ABSORPTION AND PURCHASE OF NEW AND MIXED-PLATFORM NODES, SERVERS AND PERIPHERALS SUCH AS PRINTERS. ■ DESKTOP COMPUTERS ARE BEING CONNECTED AT A HIGH RATE AS CORPORATIONS STRIVE TO LEVERAGE THE HUGE CAPITAL INVESTMENTS THEY MADE IN THESE SYSTEMS DURING THE PAST DECADE. ■ IN A FOURTH-QUARTER 1991 IDC SURVEY,

of 1,600 U.S. users across vertical markets (excluding government and education), respondents report 44% of their PCs are connected to LANs. Respondents expect this LAN penetration rate to accelerate, predicting 60% of their PCs will be attached to LANs by year-end 1992. IDC's total market data indicates a similar but slightly tempered trend when portable PCs are included. During 1989, 26% of installed PCs were linked to LANs. That number escalated to 34% in 1990 and 42% in 1991. By 1996, IDC predicts that 69% of PCs will be on LANs.



Additional IDC research indicates that, on the printer side, 30% to 40% of laser printers outputting 11 pages per minute (ppm) or fewer sold to business users are linked to LANs compared with 65% to 70% of 12-19 ppm models. Twenty-five to 35% of line printers and 30% to 35% of high-speed serial dot matrix printers are destined for LANs.

Intuitively, it seems LAN installations will be motivated by the need to share applications. And in fact, sharing peripherals such as printers is a leading reason for installing networks. A December 1991 *Infoworld* subscriber study finds that printer sharing and storage device sharing are the most cited reasons for installing LANs. These two reasons are cited by 84% and 74% of respondents, respectively.

The nature of the LAN hierarchy is changing. Increasingly, LANs are comprised of different platforms such as workstations, PCs, Macs, minis and mainframes. And a large percentage of LANs are bridged to another LAN, wide area network (WAN), minicomputer or mainframe. In such cases, printers are accessed across the platform.

PRINTING PROBLEMS PLAGUE LAN ADMINISTRATORS

Integrating printers is a complex problem for LAN administrators. Although printers are important to users, they remain a lower priority for Network Operating System (NOS) suppliers, who continue to focus on data access, communication and security. As a result, printer and third-party vendors who make accessories or enhancement products are left to solve the network administrators' problems.

"Common problems experienced by end users include excessive waiting times, inaccessible or inconvieniently located printers, and problematic network print management features."

Once a printer is shared by at least two users, every printer feature should be remotely and dynamically accessible by each user. In an ideal world, the printer/NOS should be able to transmit any print job, regardless of font, data stream or required forms, and have the system intelligently and transparently print it at the closest available, appropriate printer. Notification of job status would then be communicated back to the user.

At this point, printer, interface and software technologies are years away from this ideal. This is less attributable to technical limitations than it is to the lack of cooperative development between printer and software suppliers. There are, however, solutions available today that will make printing and print administration more user-friendly to users and network administrators alike.

Currently, the NOS limits its user knowledge and control of the print function except in rare instances where there is some degree of two-way communication between printer and network users. More typically, when a print job is transmitted across a network, there is limited control over which printer will be utilized, and no guarantee that the job will be printed in the form requested. At best, the typical NOS notification regarding a specific job informs the user if the printer is busy, shut off or out of paper. "Busy" can mean anything from being truly occupied to some type of printer malfunction.

The NOS may also permit the user to determine and change the job's print queue status within the constraints determined by the LAN administrator. However, the user is usually limited in printer choice, since the LAN administrator has generally predefined print queues for specific applications, print format parameters and particular individuals' access.

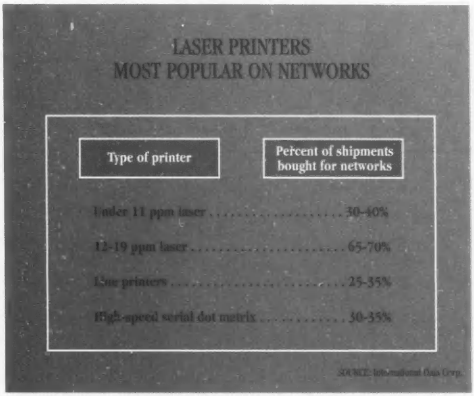
Further, the user's ability to determine font type, page orientation (portrait or landscape), or graphics content may not be respected for a number of reasons. For instance, the printer's random access memory may be inadequate to accommodate the requested fonts and graphics. Or, the desired fonts may be unavailable at the printer. In these instances, at a minimum, the user should

be informed that there is a problem, and be given options for dealing with it.

Where possible, the problem should be solved transparently for the user. This could happen in the case of best-fit font substitution. However, due to the wide variety of printers and network environments, the kinds of solutions mentioned here may not be available.

Common problems experienced by end users include excessive waiting times, inaccessible or inconveniently located printers, and problematic network print management features. Most important network print management features involve communication to users concerning breakdowns, job completion, low consumables and intelligent routing and font downloading.

Unfortunately, due to the heterogeneous hardware and software environments being connected, solutions tend to be customized for individual problems. This state of affairs will persist for the next three to five years. Limitations in printer designs, along with those in application and NOS software printer support, have resulted in network configurations that fail to maximize printer capabilities.



PLANNING TO MEET THE CHALLENGES

With careful planning, network printing problems can be avoided by addressing five areas. They are: capacity, homogeneity versus heterogeneity, printer location needs, software applications, and graphics/images and font usage.

Capacity

Capacity refers to the number of users, the number and size of jobs, and the type and size of media users require. It is important to consider current and future capacity needs.

In assessing capacity the goal is to be able to select the right number of printers, as well as the correct printing speeds and features. It is important to know whether users tend to print many short (up to 10 pages-per-document) jobs, a few long jobs, a mix of short and long jobs, or small jobs with high-volume bursts at the end of transaction periods.

IDC studies show that the most common speed of network-based printers regardless of network capacity is 8 ppm. This is true despite the fact that such speed is only appropriate for small workgroups of three-to-four users. Although there is an increasing availability of low-cost sub-8 ppm personal, single-user printers, the trend for the LAN printer market is away from such devices.

Largely as a result of cost-conscious management, standalone desktop computers are being networked, and the hidden costs of ownership (consumables, maintenance) of personal page printers are viewed skeptically. The clear trend is toward higher performance page printers that are suitable for sharing by five-to-twenty users.

"It is wise to examine printer use patterns. Sometimes, printers are used as convenience copiers."

Fortunately, a new class of laser printers, the most common printing technology shared on networks, is available. At 15-20 ppm, these printers run at twice the rated speed of earlier 8-11 ppm models, and are designed to be shared by five-to-ten users, but may accommodate up to twenty.

These printers often list for under $5,000, and typically range from $2,400 to $16,000. Their monthly duty cycles — the maximum pages per month recommended by the manufacturer — range from 25,000 to about 50,000, which makes them appropriate for small to midsize workgroups. They are available from a number of vendors including Data-products, DEC, Fujitsu, Genicom, Hewlett Packard, Image Systems, QMS, Texas Instruments and Toshiba.

When choosing printers, paper handling is important to consider. The larger the number of users sharing the printer, or the longer the print jobs, the greater the need for a printer with large capacity input and output. This situation also calls for output handlers with a job offset capability and/or mailboxes/sorters.

Low-to-mid volume output is considered to be 300-600 pages per person per month, while high volume is 1,000-1,500 pages per person per month. Eight ppm printers often only have one 200-250 sheet input bin, a slightly smaller output bin and no job offset capability. In contrast, the new breed of workgroup printers often has two 500-sheet input bins, job offset and/or optional (additional cost) mailbox/sorters.

It is also wise to examine printer use patterns. Sometimes printers are used as convenience copiers. This practice increases print capacity needs, although it may be appropriate under some conditions. A cost-benefit analysis can determine when such conditions exist and whether it makes sense to select personal, rather than shared, printers for networked users. Generally speaking, the lower the laser printer speed, the greater the cost to produce a page. More on this can be found in the article appearing in the April 20, 1992 issue of *Computerworld* entitled "Six Steps to Calculate Cost of Ownership."

Thus, giving everyone on the net-

work his own four-to-six ppm personal laser printer is less cost-effective than sharing workgroup printers on the network. There are times when personal printers are appropriate, i.e., when the user is high-ranking, someone who requires stringent security or someone whose job requirements warrant a dedicated printer.

Consideration should also be given to network users who need to print on 11x17 inch (ledger) paper, on two sides of a page (duplexing), and envelopes. Ledger paper is sometimes used for large spreadsheets, or for printing pamphlets and newsletters. Not all workgroup printers support 11x17 inch paper. It tends to be either a standard feature or not available at all.

Duplexing is popular in paper-intensive industries. Duplexed output costs less to mail, file, archive and otherwise store. When available, it is usually an option on low-to-mid speed (20 ppm and less) printers. It is usually either standard or not available at all on higher speed printers.

Envelope printing is generally available on personal and workgroup printers. Capacity varies, running up to 75 envelopes, and should be evaluated before before making a commitment.

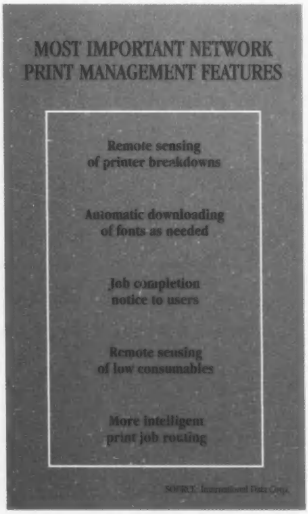
Homogeneity Versus Heterogeneity

Planning for a heterogeneous network with PCs, workstations and minicomputers that have shared printer capabilities requires understanding the physical interface, protocol, and page description language (PDL) requirements for the mixed platforms.

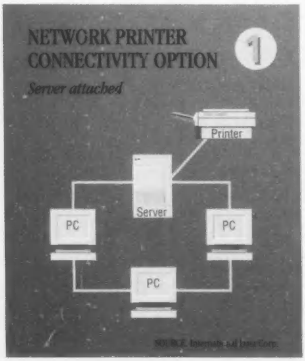
The NOS is simply a conduit for the mixed formats and does nothing to translate them into a specific printer standard. Even when the NOS provides print services to support mixed platforms, the user must still find a printer that can handle them and their PDLs.

It is still common to use a parallel interface to attach a laser printer to a PC server. However, this is changing in favor of direct network interfaces to LANs such as Ethernet and Token Ring. The Macintosh uses either its own version of a serial interface or a Localtalk interface.

Direct connection to the network is preferable, so take note of what topology (Ethernet or Token Ring) the network employs. When choosing a network printer, be sure the printer's physical interface matches network requirements.



"...much of the effort spent on developing revenue from server hardware has been replaced by greater emphasis on network operating system software."



In some instances, simultaneous operation of more than one printer port is desirable, and some printers support this. For example, the parallel and Ethernet ports can be operated together. However, it is important to determine if both ports can switch between PDLs, or whether they are fixed to support the same PDL. HP's PCL and PostScript are the two most common PDLs. In addition, TCP/IP and Appletalk are two protocols that may also require support.

Novell's Netware 3.11 (the 386 extension to the Netware name has been dropped), which was announced at Networld in February 1991, is an example of vendor support for mixed LANs. Netware 3.11 enables client devices based on DOS, Windows, Macs, OS/2 or Unix to share file and print services on a Netware LAN. Mac support was available on Netware 286 but not the 386 version, and Unix support was not provided at all. TCP/IP support is also integrated in 3.11.

Digital Equipment Corp.'s support for Unix, Ultrix and VMS in DECnet and TCP/IP environments, in addition to its support for PCs and Macs through Pathworks, are other examples of vendor support for complex LANs. Sitka's TOPS software offers more than just PostScript printer sharing across Sun workstations, PCs and Macs; it is a complete network operating system that lets each of the three platforms share files in their native mode.

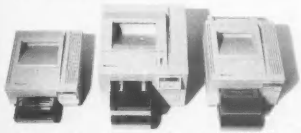
Printer Location Constraints and Network Connectivity Options

A key issue in planning for network printing is deciding where the printers should be located. In the past, technological limitations required that printers be attached to servers. This still presents logistical problems. For example, if the server must be secured after normal working hours, user access is constrained. If a user's system is concurrently acting as both a server and user node, that user will be inconvenienced every time someone comes into his office to print a job.

Until now, waiting for network printing has required the same amount of patience.

HP network-ready LaserJet printers help your users get their output faster.

With an HP network-ready LaserJet printer, your users won't go begging for fast output. Network-ready LaserJets avoid parallel bottlenecks and print up to fifteen times faster than ordinary machines. Since your file server is relieved of some print-server functions, your printing network flexibility increases almost immediately. You'll enjoy faster transaction times. Greater security. And increased speed across your entire system.



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LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX,* Macintosh, and PC operating systems, call **1-800-752-0900,** Ext. 3074 for the HP Connectivity Solutions Guide.

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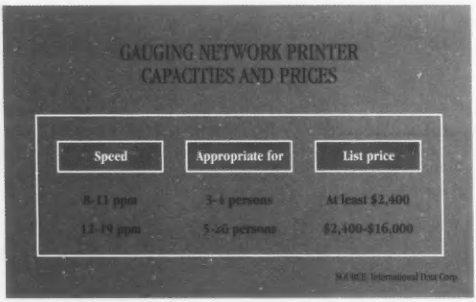
There are four major network printer connectivity options to consider:

- server-attached
- shared via user node with spooling done remotely
- shared via user node with spooling done at user node
- direct to network with network adapter.



Server-attached

Presently, the most common attachment for LAN printers involves having one or more printers attached to a server responsible for file management, printer support and other services. The server may be a computer or a dedicated hardware box. At present, the principle NOS vendors can support a range of server/printer ratios from five-to-eight or five-to-sixteen through either serial, parallel or remote attachments.

This configuration is a legacy of the earlier days of NOS, when server connections were the only type of printer support that network operating system software provided. The NOS vendors, at that time, were much smaller companies, unable to fund a wide variety of system options. They also realized that offering other attachment options would only have stimulated third-party vendor competition.

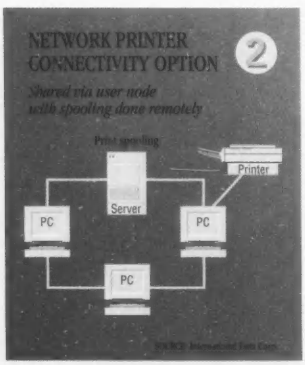
Over the past three years, much of the effort spent on developing revenue from server hardware has been replaced by greater emphasis on NOS software. As an example of this phenomenon, consider Novell's withdrawal from the server market and DEC's Source Kits, which provide the necessary host software to drive DEC's Printserver printers from non-DEC Unix servers. With this new emphasis, the capability to support alternative printer attachments not tied to specific server hardware offers a competitive advantage for NOS vendors.

Tied to this has been the printer and printer accessory vendors' desire to make sure printers can be attached anywhere on networks. This has been such a major issue that several vendors, including Intel, Lexmark and Castelle, have developed very small network adapters that are transparent to the NOS and allow the printer to be physically attached anywhere on LAN cabling. The printer's serial or parallel interface is plugged into the network adapter, which, in turn, attaches to Ethernet or Token Ring network cabling.

Shared via User Node with Spooling Done Remotely

The second most common LAN printer configuration is comprised of a workstation, usually a user's node, whose printer can be accessed by several other users on the network. The workstation does no spooling, and as a result, only one person can print at a time. Multitasking environments such as Unix and Windows prevent user interruption during print jobs.

However, in other environments, when a printing job is being processed, the node's ability to concurrently process other software is appreciably slowed. For this reason, the number of users with access to this printer is limited, usually to no more than three to five people.



A variation of this set-up is to have spooling done on a remote server. This allows print jobs to be simultaneously sent to the printer. In this variation, one or two printers are attached to the workstation. Novell, the most popular NOS supplier, now provides support for remote printing from the server, except under Entry Level Netware (ELS). ELS does not support remote printing because it supports only four to eight users.

Shared via User Node with Spooling Done at User Node (Concurrent Server)

This third LAN printer setup employs a concurrent server — a workstation used as a server providing print spooling and file service as well as end-user capacity. This configuration is not common because it suffers from the same problem as the shared node's printer mentioned above: the node's ability to concurrently process other software needs is appreciably slowed. This configuration can also present a data security risk. If an application crashes, the server function of the workstation is similarly affected.

Direct to Network with Network Adapter

This is the least common configuration, but one that is increasingly being used because of its advantages. It consists of a printer with a built-in Ethernet or Token Ring interface connected directly to the LAN. By separating the file server function from the printing (spooling) function, data security is better addressed. Also, direct-connect printers benefit from enhanced transmission speeds on Ethernet and/or Token Ring. This provides a significant benefit for large Postscript, high-resolution, color- and graphics/image-intensive files being sent to a printer or a typesetter/imagesetter.

Traffic on the network and the interface to the printer are bottlenecks when it comes to speed of printing. When multiple print jobs are sent simultaneously across the network to the server, there is

a delay while each job gets into and out of the server's print queue. More time is lost if the printer is attached to the server via a parallel interface instead of Ethernet or Token Ring. The contrast in communication speed is vast — Ethernet's maximum speed is 10M bit/sec and Token Ring's is four or 16M bit/sec while a parallel interface allows only 10K bytes/sec.

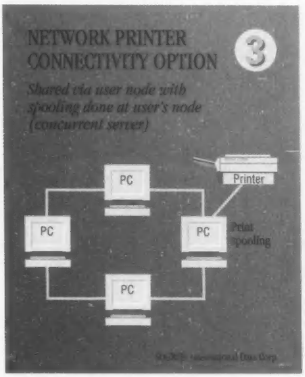
Since there is a direct relationship between an interface's performance and its price, high-speed Ethernet and Token Ring interfaces which list between $700-$900 are commonly used for higher cost printers. Accordingly, higher speed printers (15 ppm+), color devices, and high-resolution devices (600 dpi+) are appropriate candidates for those two cabling schemes.

A number of printer vendors have begun to offer Ethernet and Token Ring interfaces as options on their workgroup printers. These include HP, Toshiba, QMS, Apple and DEC. In addition, third-party vendors such as Intel and Castelle offer external network adapter cards for printers. These allow the connection of two-to-four printers per card.

Software Applications

Knowing the applications and their versions is critically important. One of the most frequent problems encountered by users is their job not printing at all, or printing incorrectly. This frequently happens because the user unknowingly sends the job from an application configured to move output in a specific printer emulation format, to a printer whose current set-up does not match the incoming format. Network printers must be able to print and switch between the emulations supported by applications.

The ability of a printer on a network to seamlessly handle multiple data streams has high utility to both users and network administrators. This is particularly valuable in mixed networks where there is a need to support multiple data streams. Postscript, PCL, DEC ANSI, IPDS, Epson, and line printer have the leading page description language/ emulation market shares. Currently, because of the inability of most laser printers to automatically switch emulations, a PostScript printer is often set up to accept only PostScript while a separate printer may be designated for PCL output.

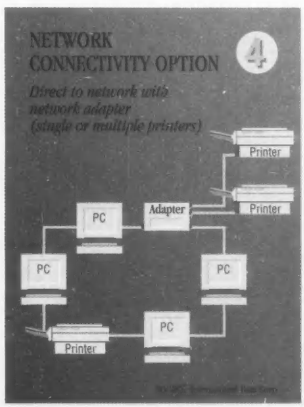


This limitation is changing as several non-impact printer suppliers including HP, QMS, DEC, Tektronix and Talaris offer printers that sense the incoming data stream and print them accordingly. Adobe, which developed Postscript, has just announced support for emulation switching.

Graphics/Images and Fonts

As graphics make output more sophisticated in terms of images and fonts, the amount of data being transferred across the network increases. This has implications for the amount of required printer memory and network bandwidth required to transfer the job to the printer.

With fonts there is also the issue of



WYSIWYG, the ability to see on the screen exactly what will be printed. To support the growing sophistication of user output, it is important to choose network printers that have memory expansion capabilities, WYSIWYG fonts, support for high bandwidth interfaces, and CCITT-based image compression capabilities.

Most workgroup/network printers have generous memory expansion capabilities. While many offer a number of fonts on the printer, not all are WYSIWYG fonts. PostScript and PCL support image compression, the ability for a printer to decompress data is also expected to become important.

NEXT GENERATION NETWORK PRINTING

Several printer and NOS characteristics build a case for print management software on the network. There is a need to transparently manage and distribute printing resources such as fonts, printer data streams and paper handling capabilities to users across the network. Print management software, currently in its nascent stages, will seamlessly handle different data streams by either locating an appropriate network printer that can handle the necessary data stream or translating it into a bitmapped code that is sent to a printer conveniently located near the requesting end user. Print server software from Insight Development Corporation offers a number of these capabilities.

It makes sense for print management software to assume much of this responsibility for groups of lower cost, lower performance printers. This way, it is not necessary to justify the incremental cost of the added intelligence and two-way communication interfaces needed to allow remote and transparent user access. Given that many LANs today are still relatively small — averaging twelve nodes — less expensive printers will continue to proliferate, making a compelling case for intelligent print management software.

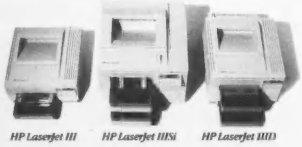
In addition to reducing costs, printers running intelligent print management software can charge back to departments based on individual departmental usage.

It's never been easier to manage your entire printing network.

With HP network-ready LaserJet printers, you can monitor your network right from your desk.

HP network-ready LaserJets are actually seen as additional nodes on your network. Which allow you to manage from one location and take full advantage of the features in your network management software. There's even a new diagnostic feature which lets you track the success of data transfer between your server and a network-ready LaserJet.

Network-ready LaserJet printers were engineered in cooperation with NOS vendors. So they work seamlessly with your current network and operating system. Including Novell Netware (Novell-certified), 3COM 3+Open, Microsoft® LAN Manager, and IBM LAN Server. Or the HP-UX, SunOS, and SCO UNIX® operating systems. Even Macintosh environments.



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PE12259

Sunsoft adds image tool to Solaris API

BY MELINDA-CAROL BALLOU
CW STAFF

CHICAGO — Sunsoft extended the Solaris graphics application programming interface (API) by introducing an imaging library with open hardware and software interface specifications.

Dubbed XIL, the new API offers developers a standard interface for developing imaging and full-motion video products that are portable and scalable across Solaris-based systems. XIL adds to Sunsoft's XGL interface for two- and three-dimensional geometries, which increases the company's graphics offerings for Solaris on Sun Microsystems, Inc.'s Scalable Processor Architecture (SPARC) and X86 platforms, Sunsoft officials said.

XIL is an interface for imaging applications that is layered between higher level programming interfaces and system software. It contains three primary components: a programing interface specification for basic imaging functionality; a higher performance implementation of this specification tuned for the SPARC system; and the hardware interface specification for hardware manufacturers to develop XIL imaging accelerators.

XIL offers a full 30 frame/sec., 640- by 480-video window on standard SPARCstation 2 workstations and fast compression technology to provide storage savings.

OS/2 faces Windows in the NetWare world

Microsoft now claims the lion's share of NetWare users, but IBM is gearing up for a major fight

ANALYSIS

BY MICHELE DOSTERT
CW STAFF

As IBM and Microsoft Corp. struggle for the hearts and minds of personal computer users, both companies seem to realize that selling the best stand-alone operating system will not be enough, and both are looking at the networked world.

Currently, Windows has a huge lead in the Novell, Inc. NetWare local-area network arena. According to Novell's 1991 figures on NetWare clients, OS/2 accounted for only about 3% of NetWare clients; DOS and Windows accounted for about 87%. However, that was the old OS/2; IBM hopes that the new, multitasking OS/2 2.0 will gain more acceptance in the LAN world as well as on stand-alone PCs.

Early adopters of OS/2 2.0 on NetWare are enthusiastic, praising both OS/2 and Novell's OS/2 Requester, the connectivity piece supplied by Novell for OS/2 clients.

Overkill warning

Sean McRae, senior systems technican at John Hancock Mutual Life Insurance Co. in Boston, said he likes OS/2's multiple session capability, but he cautioned that OS/2 may be overkill for many corporate desktops. "You have to trade off Windows' ease of use and large application base against OS/2's stability and multitasking," McRae said.

"If you just need to jump back and forth between applications, Windows is fine," McRae said. "But if you really need large processes running in the background, such as communication services or large database queries, OS/2 is better. That's why, although our internal standards program recommends Windows, we support OS/2 — because some clients really need it."

Like many IBM shops, McRae's OS/2 desktops are connected simultaneously to IBM mainframes and NetWare LANs. He warned that teaching NetWare and IBM's Extended Services to coexist is not a trivial task. "The technology works, and you can step your way through it, but it's not for the faint of heart," he said.

Christian Spence, senior network engineer at PC Edge, a large San Jose, Calif.-based NetWare reseller, said he is excited about OS/2 as a LAN client. "I crawled into OS/2 2.0 in beta in the middle of last year, so I've pounded on it a lot; it's robust, it's stable, and best of all, it's multitasking.

"Using the Virtual DOS Machine capability, I can log in as an OS/2 user, open several different DOS windows and log in to each window with a different name. You can actually have several utilities running at the same time. This means you can be managing your LAN with the Console utility and have other applications running at the same time, and you're not I/O bound," Spence said.

Spence said he particularly likes OS/2's tight integration between the graphical Workplace shell and OS/2.

Quest for perfection

Microsoft has put a lot of development and testing effort into ensuring that Windows 3.1 is a better NetWare client than Windows 3.0. Users of Windows 3.0 were plagued by an inability to properly configure Windows for NetWare. Both Novell and Microsoft were constantly issuing new patches.

Windows 3.1 is now shipped with a NetX file that discovers and maps network connections and notifies users of any configuration problems.

"Windows 3.1 is certainly a lot better on the LAN then 3.0 was," Spence said, "but it still runs on top of DOS, which limits the multitasking functionality."

Windows New Technology (NT), scheduled for release in 1992, will have full 32-bit multi-

Continued on page 58

OS/2 v. Windows as NetWare clients

OS/2 2.0

Strengths
- True multitasking efficiently handles big background queries for power users.
- OS/2 Requester Virtual IPX allows users to run multiple network sessions, accessing different servers and using different logons.
- Loads IPX and NetBIOS at start-up.
- Can log in and out of network from within OS/2.
- Workplace shell tightly integrated with operating system.
- More stable code.

Weaknesses
- Added power equals added complexity.
- Users unclear on IBM's long-term operating system strategy.
- Integrating with IBM mainframe environment and NetWare simultaneously is not simple.
- Limited application availability.

Windows 3.1

Strengths
- Easy to use.
- Lots of applications.
- Can be loaded and run from the network drives.
- New configuration utilities to simplify LAN use.

Weaknesses
- Can't run multiple network sessions simultaneously.
- DOS kernel won't allow true multitasking.
- Must exit Windows to log in and out of LAN.
- Lingering hostility over LAN incompatibility with 3.0 release.

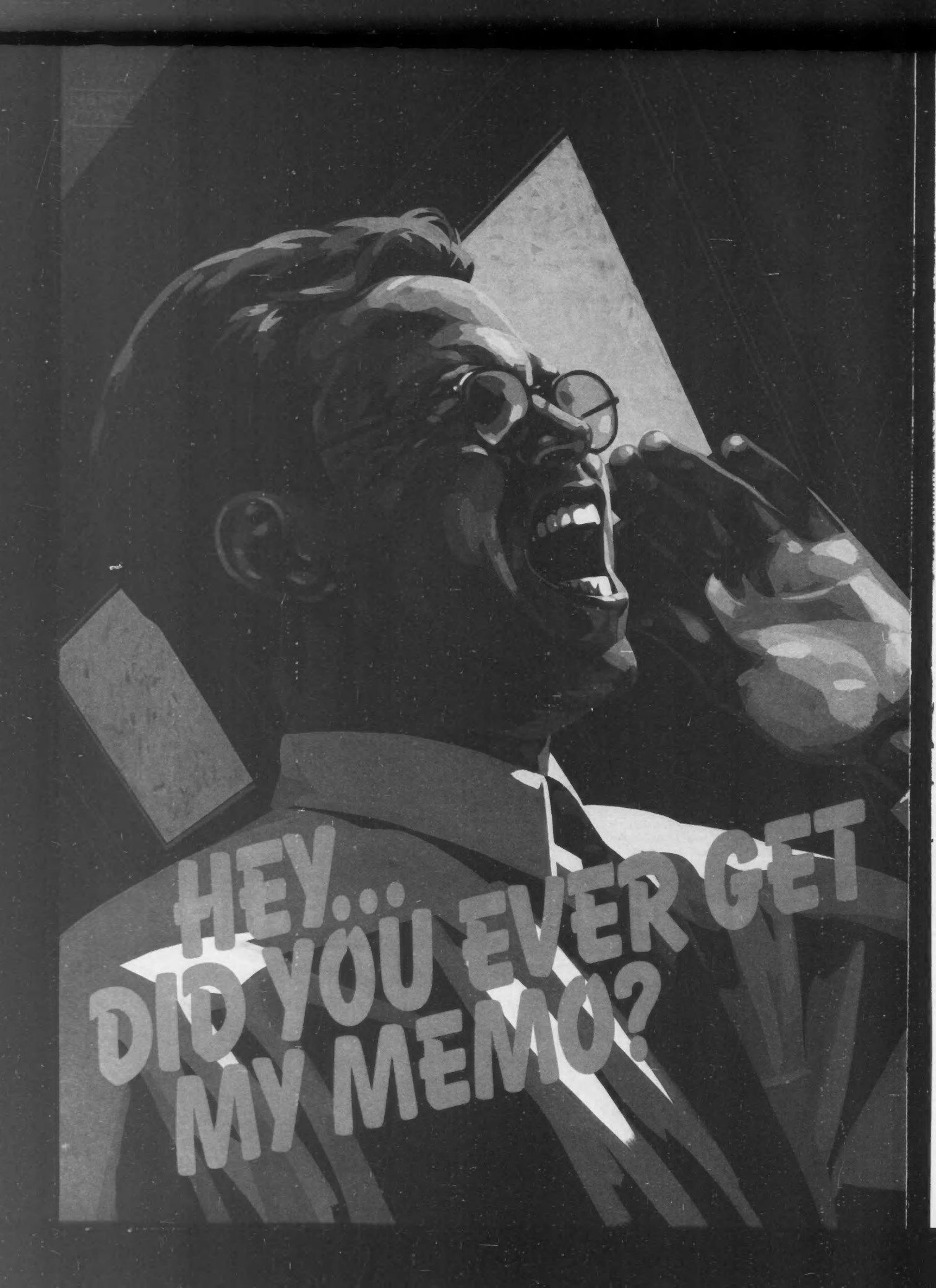
CW Chart: Michael Suggins

$48,288,461,672

By the end of this week Computerworld readers will have spent over **$48.2 Billion** on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD
The Newspaper of IS

Source: IDG Research Services, Fall 1991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In addition to the In Box that every e-mail package offers, WordPerfect Office gives you an electronic Out Box. So in addition to all the usual things you'll be able to do with your incoming mail (including read, reply, forward, save and print), we give you unusual control over your *outgoing* messages as well (including the ability to reread, rethink, rewrite and retract).

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If people would simply agree on a single computer platform, hooking everyone up with an e-mail system would be no trick. But since *that* shows no signs of happening, WordPerfect Office is available for all of the most popular platforms, including DOS, Windows, Mac, UNIX, VAX and Data General.

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And unlike e-mail packages that simply deliver the mail, WordPerfect Office includes powerful Calendar and Scheduling functions that provide entirely new ways for your people to work together productively.

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PC net keeps health care costs in check

BY CAROL HILDEBRAND
CW STAFF

With health care costs becoming sky-high, providers need to keep operations as lean as a long-distance runner. The networked personal computer environment at St. Agnes Medical Center in San Joaquin, Calif., not only saves costs, it has made the whole operation run more efficiently.

The 320-bed facility serves more than 1 million people regionally, and it has been working on reducing information systems costs for several years now. For St. Agnes, the answer to cutting costs was found on a local-area network. The center is integrated on an Ethernet 10Base-T network, with applications integrated throughout the departments onto the LAN.

Kevin Shimamoto, the center's director of information technologies, said the network has a twofold effect. "Integration helps improve productivity by being able to get data throughout the hospital more easily. And when people are being more efficient, the hospital saves money. It helps keep costs down."

Between 460 and 490 PCs are on the network, as well as approximately 75 laser printers. The network is run from a data center about a half-mile away, which is linked via fiber-optic cable. The data center has a large variety of Compaq Computer Corp. servers, ranging from 25-MHz, 386-based boxes all the way up to 50-MHz 486s. Shimamoto said that by the end of the fiscal year he planned to bring about 90% of the servers up to the 486 level and prune the total number down to about 10 to 15 servers overall.

The most complex application currently running is a surgery scheduling system that combines three different departments.

The first department is surgery scheduling, which is able to maximize operating room facilities. That program is linked to materials management. As soon as a surgery is scheduled, a "pick ticket" is created on-line and sent via the LAN to materials management.

That department picks all the materials necessary for the procedure, from the syringes and gloves to the more intangible things: "If the doctor wants Mozart played in the operating room, it will go on that," Shimamoto said.

From there, the on-line list proceeds to distribution, which assembles the materials and sends them to the operating room.

All materials used during the surgery are automatically debited from supplies and the reorder goes to purchasing. The purchasing department uses purchasing software to be linked via modem to the hospital's main suppliers to speed supply ordering.

Shimamoto said that the scheduling system, which has been in place for approximately two years, was able to be implemented because of enthusiastic support from the heads of each of the three departments involved.

"Buy-in from the heads of those particular areas was the single most important thing that made the process work," he said. He added that the process went fairly smoothly, although not without a few glitches.

ON SITE

St. Agnes Medical Center
San Joaquin, Calif.

- **Challenge:** Increased operational efficiencies with an eye toward reduced health care costs.
- **Technology:** PCs and Compaq servers linked via Ethernet.
- **Results:** New interdepartmental communications and new applications made possible without increased staffing.

Emphasis on efficiency

Among the other projects in place at St. Agnes are a computerized payroll system that has cut payroll processing to less than 10 man-hours of pay, as well as associated costs.

An on-line fund-management program allowing the center to boost donations and track them more efficiently while maintaining staff size has also been established.

Shimamoto said that his next big goal is to move all remaining asynchronous traffic over to Ethernet packet speeds of 10M bit/sec., as well as to move the minicomputers over to reduced instruction set computing-based systems. As it migrates to a graphical environment, the center is going to need multitasking abilities, he said.

IN BRIEF

Novell deal extended

■ **Novell, Inc.** has expanded its NetWare 3.11 Premium maintenance, management and upgrade protection program. Originally announced for new users of NetWare 3.11, the promotion has been extended to users of the network operating system. The program will run through October.

■ **Hewlett-Packard Co.** ported HP Omniback, its network-backup management system, and HP OpenSpool, its print management system, to **Sun Microsystems, Inc.** SPARCstations running SunOS.

■ Smart hub maker **NetWorth, Inc.** put a price tag on its NetWare Application Engine, a module allowing users to bundle Novell NetWare server functions into their intelligent wiring hubs. The Irving, Texas-based vendor is charging $4,995 for the module running NetWare Runtime — a single-user version of NetWare 3.11 minus file, print and directory services. Modules without Runtime cost $3,995.

Traditional LAN sales growth to slow as new servers emerge

BY MICHELE DOSTERT
CW STAFF

CAMBRIDGE, Mass. — The stratospheric growth of the local-area network operating system market will level off during the next three years, according to a recent study by market research firm Forrester Research, Inc.

First, Forrester Research forecasts a decline in personal computer shipments.

In addition, the report noted that many of the PCs being delivered now are laptop machines that are not intended as LAN clients.

According to Modahl, low-end, peer-to-peer networks are eating away at the 5- to 15-node LAN market. She said this trend should accelerate when Microsoft Corp. releases its Windows New Technology product, which is slated to include built-in, peer-to-peer networking.

The report said that while Novell, Inc. may cease to grow at breakneck speed, there is not much chance for other vendors to wrest control of the basic network services market from Novell. Instead, vendors must deliver additional servers for mail, database and communications into existing Novell NetWare LANs.

Forrester Research said it expects the early growth in new server software to be concentrated in the communications server market, but that both mail and database servers will boom in 1993.

Shifting gears

While growth may slow in traditional LAN operating system sectors such as file and print servers, new types of servers will bring faster gains

Revenue in millions

	1991	1992*	1993*	1994*	1995*
File/Print servers	$435	$547	$640	$720	$798
Additional servers	$99	$205	$371	$497	$636
Total	$534	$752	$1,011	$1,217	$1,434

*Projected

Source: Forrester Research, Inc.

CW Chart: Michael Siggins

Instead of the 45% to 50% annual growth rates the U.S. market enjoyed from 1989 to 1991, Forrester Research predicted growth of only 18% in 1992, declining to 12% in 1995.

The report, "New LAN OS Pastures," was authored by Forrester Research analyst Mary Modahl and cited several reasons for the predicted slowdown.

A different view

Novell resellers, however, are generally more optimistic about future growth than Forrester Research is.

Toby Victor, president of ISYX, a Rockville, Md.-based reseller, said, "To maintain an exponential growth rate for more than a few years is difficult; eventually, the growth number has to slow down. But a decline in growth is a lot different from a decline in actual sales.

"Our Netware distribution center is running at 109% of quota for the first half of 1992, and the biggest LAN purchasing season is traditionally the third and fourth quarter," Victor added.

Victor said there are so many desks that still do not have a PC, so many stand-alone PCs and so many LANs still to be upgraded that there should not be a slowdown anytime soon.

OS/2 faces Windows

CONTINUED FROM PAGE 55

tasking functionality. It remains to be seen whether NetWare users will adopt OS/2 now or wait for Windows NT.

Novell is staying neutral in the desktop client wars.

"Most OS/2 users are in corporations, and corporate users are usually networked, so most OS/2 users are LAN clients. The OS/2 Requester has been strategically important for both us and IBM. But we're committed to supporting all popular desktop clients with full functionality," said William Donahoo, marketing director for Novell's desktop systems group.

PC Edge's Spence thinks OS/2 has a future on the LAN. "We don't have a lot of customers for it yet. Given IBM's past mistakes, many users were leery. But as the reviews come in, more and more of our customers are looking at it," he said.

Predicting future market share of OS/2 has made fools of many industry analysts, and few are eager to repeat the mistakes they made in past years.

"I think LAN users are still unclear as to what advantages OS/2 has over Windows as a LAN client," said Barry Gilbert, an analyst at the Acton, Mass., office of market research firm Infocorp, "and they see no reason to spend a lot of time and effort evaluating it. I think IBM still has a lot of OS/2 marketing to do."

NEW PRODUCTS

LAN hardware

Madge Networks, Inc. has introduced the SmartCAU, an intelligent Token Ring wiring concentrator.

The product is compatible and interoperable with the IBM 8230 Controlled Access Unit and supplies fully automated fault recovery and management capabilities.

Network management software is included that enables users to manage SmartCAU remotely from a personal computer workstation connected to the Token Ring network. Automatic detection, location and isolation of faults on the network are key features.

A Dual Reconfiguring Ring detects faults on the trunk and switches data onto the backup ring path. This feature also keeps the network running while remaining invisible to users.

SmartCAU costs $2,995.

Madge Networks
42 Airport Pkwy.
San Jose, Calif. 95110
(408) 441-1300

LAN software

Alloy Computer Products, Inc. has started shipping MultiNode.

MultiNode combines peer-to-peer local-area network and multiuser DOS technology, creating a high-performance networking system that supports personal computer workstations and terminals.

The product includes multitasking features, Novell, Inc. compatibility and connectivity and has communications server features. MultiNode consists of two software Modules: MultiNode Station and the MultiNode MultiServer.

MultiNode Station prices range from $99 to $889. MultiNode MultiServer prices range from $195 to $1,095.

Alloy Computer Products
1 Brigham St.
Marlboro, Mass. 01752
(508) 481-8500

Workgroup software applications

Altia, Inc. has announced Avid Design, a human interface design software package.

The product provides intuitive, mouse-driven graphical design capabilities, accelerating instrument and control systems development and eliminating the need to write graphics code.

According to the company, realistic human interface prototypes can be created in days, not months.

A graphical editor helps create and assemble components for an instrument front panel and allows hierarchies of complex elements to be treated as a single structure. A library of prebuilt components is provided, enabling users to create component libraries for recall.

Avid Design costs $4,900.

Altia
7240 Fleetwood Court
Colorado Springs, Colo. 80919
(719) 598-4299

CaseWare, Inc. has introduced the CaseWare/PT Problem Tracking System.

CaseWare/PT addresses change requests and bug reports supporting new development and maintains existing software.

Users have complete visibility and control of engineering change requests through all the phases of design, source code development, documentation and maintenance. Key features in the system include fully integrated defect/change tracking, problem report capture, modification, query and reporting.

CaseWare/PT costs $3,500 per user.

CaseWare
108 Pacifica St.
Irvine, Calif. 92718
(714) 453-2200

Modems

NEC Technologies, Inc. has introduced the UltraLite 14.4 Data/Fax Modem, a product compatible with the NEC UltraLite SL/20, SL/20P and SL/25C notebook computers.

The UltraLite 14.4 Data/Fax Modem supports V.32 bis, allowing for data transmissions of up to 38.4 bit/sec., and has capabilities such as 9.6K bit/sec. fax send/receive and enhanced cellular capability. Other features include data encryption, flash read-only memory, Microcom Networking Protocol (MNP) 4 or V.42-compliant error protection and MNP 5 or V.42 bis data compression.

The modem costs $699.

NEC Technologies
1414 Massachusetts Ave.
Boxboro, Mass. 01719
(508) 264-8000

Global Village Communication, Inc. has announced the PowerPort series of internal fax/data modems.

The three products in the series were designed for Apple Computer, Inc. Macintosh users. They provide data transmission, send-and-receive fax capabilities and the company's GlobalFax software.

PowerPort/Gold is a V.32 bis modem that has built-in V.42 error correction and data compression. PowerPort/Silver and PowerBook users can connect to an office network via AppleTalk Remote Access. PowerPort/Bronze was designed for heavy users of fax services.

PowerPort/Gold costs $795, PowerPort/Silver costs $595, and PowerPort/Bronze costs $295.

Global Village Communication
Building 8
685 E. Middlefield Road
Mountain View, Calif. 94043
(415) 390-8200

Unix

Chronology Corp. has announced that it will offer a version of its TimingDesigner software package for Unix workstations supporting X Window System.

According to the company, TimingDesigner provides users with the ability to accurately model and analyze the worst-case timing of complex digital circuits by tightly linking an interactive diagram editor with a custom timing spreadsheet.

TimeDesigner enters and modifies complex timing diagrams and can calculate critical timing margins.

TimingDesigner costs 4,995.

Chronology
2721 152nd Ave. N.E.
Redmond, Wash. 98052
(206) 869-4227

Workstations

Mobius Computer Corp. has announced the Mirage Series Model IPS/2 Unix workstation, a Sun Microsystems, Inc. Scalable Processor Architecture (SPARC)-based system that is compatible with Solaris 1.0.1 and SPARCware applications.

The Mobius Mirage is configured with 16M bytes of random-access memory expandable to 128M bytes and has three SBus slots and space for three internal drives or other peripherals.

Mobius Mirage IPS/2 has 1,152- by 900-pixel resolution, 256 colors and five types of built-in I/O ports: Ethernet, two serial ports, an external Small Computer Systems Interface-2 port, a sound port and Solaris 1.0.1.

The diskless Mirage IPS/2 costs $6,990, and the disk-full Mirage IPS/2 costs $8,590.

Mobius Computer
Building 4.410
5635 W. Las Positas
Pleasanton, Calif. 94588
(510) 460-5252

Excalibur Technologies Corp. has announced the PixTex/EFS electronic text and image filing system.

PixTex/EFS was designed for Sun Microsystems, Inc.'s Scalable Processor Architecture workstations and servers running Unix in a stand-alone or networked environment.

Text and images are gathered from disks, scanners or fax machines and indexed and filed using Sun workstations under OpenLook. Images and documents are stored in an electronic equivalent to a file room, where users can create file cabinets, drawers and folders to arrange information.

Prices start at $23,600.

Excalibur Technologies
Suite 1095
2000 Corporate Ridge
McLean, Va. 22102
(703) 790-2110

Hertz Computer Corp. has introduced the Hertz 486/50E.

The product has 50-MHz capability and can be used as a stand-alone workstation or a workgroup file server. A standard Hertz 486/50E is configured with 8M bytes of random-access memory and 256K bytes of secondary cache memory.

There is a 3½-in. or 5¼-in. floppy disk drive and a 1,024 by 768 Video Graphics Array board with 1M byte of RAM. Eight I/O expansion slots, two serial ports and one parallel port are included.

According to the company, the system achieves new levels of throughput running existing applications and can maximize the full graphical and multitasking potential of Microsoft Corp.'s Windows, OS/2 and other operating platforms.

Prices for the Hertz 486/50E start at $2,149.

Hertz Computer
325 Fifth Ave.
New York, New York 10016
(212) 684-4141

Electronic mail

Cayman Systems, Inc. has updated GatorMail, its electronic-mail gateway application with Release 2.1 of GatorMail-M and GatorMail-Q.

Release 2.1 of GatorMail allows users of QuickMail and Microsoft Corp.'s Mail on LocalTalk or Ethernet to seamlessly exchange mail with minicomputer and workstation users on Ethernet via Simple Mail Transfer Protocol.

Enhancements in performance features include full support for Apple Computer, Inc.'s MacTCP 1.1, support for System 7.0 and a new enclosure handling system.

Prices for GatorMail-M and GatorMail-Q software start at $595.

Cayman Systems
26 Landsdowne St.
Cambridge, Mass. 02139
(617) 494-1999

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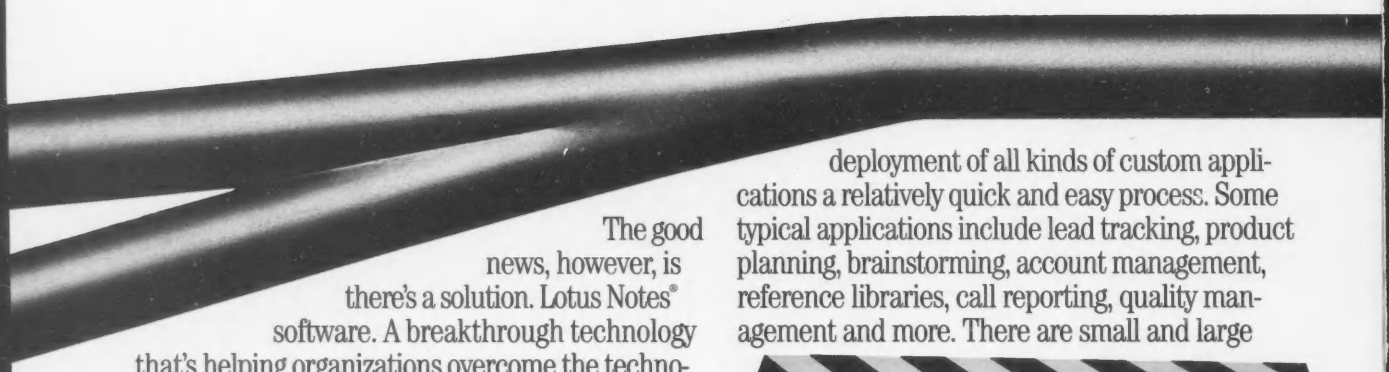

The good news, however, is there's a solution. Lotus Notes® software. A breakthrough technology that's helping organizations overcome the technological roadblocks found in most mixed computing environments, which often stop good ideas from ever going anywhere.

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Let's face it. Many companies have spent fortunes on technology over the years and have begun to wonder just how well it's paid off. With Notes, the benefits are immediate. Companies can finally begin connecting people and ideas for more informed decisions. Regardless of group size, location or network configuration.

What's more, Notes is an extremely flexible environment that makes the development and deployment of all kinds of custom applications a relatively quick and easy process. Some typical applications include lead tracking, product planning, brainstorming, account management, reference libraries, call reporting, quality management and more. There are small and large companies, in fact, that have bought Notes to solve a specific problem, only to discover that it answered other needs as well.

How People Are Using Lotus Notes

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Customer Service Tracking
Forms Routing
Quality Management
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User Group Discussions
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Technical Support
Job Postings
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Lotus Notes is an innovative workgroup computing environment designed to increase

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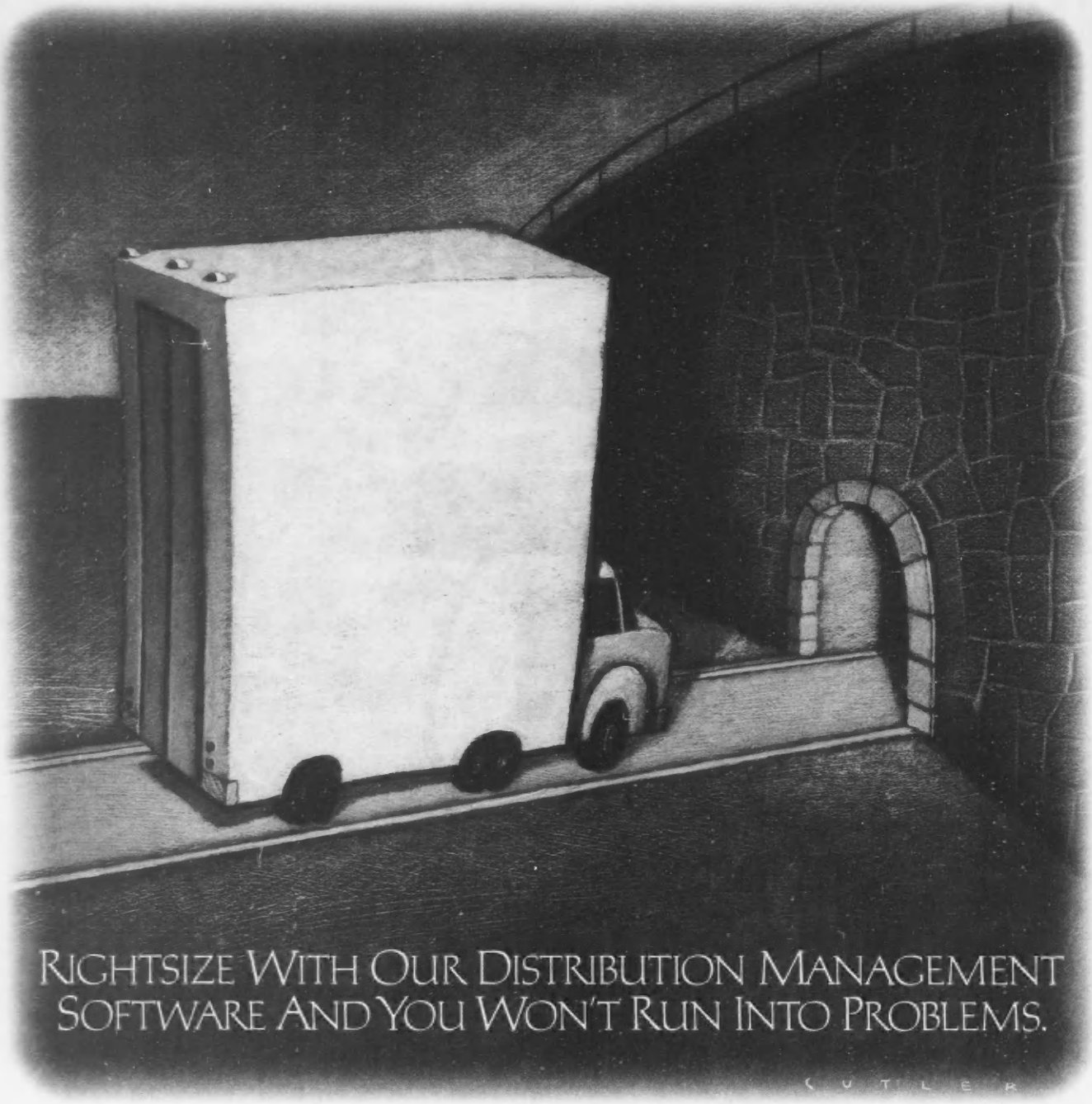

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IN BRIEF

Genie to cut daytime access rate

■ Until Sept. 7, **Genie**, the General Electric Information Services data network, will reduce its $18-per-hour daytime access rate to $12.50.

■ The **University of Illinois-Chicago**, the **Argonne National Laboratory** and the **University of Chicago** will test Switched Multimegabit Data Service (SMDS) as an alternative way of connecting with the Internet. SMDS, which is a high-speed, packet data network topology for the public-switched telephone network, offers speeds of 1.5M to 45M bit/sec. The Internet is the global academic and research data network.

The trial is being orchestrated by **CICNet, Inc.**, a data networking company located in Ann Arbor, Mich., and founded by several Midwestern universities. **Ameritech Corp.**, the Chicago-based regional telephone holding company, already has one SMDS trial under way in Michigan and plans to offer commercial SMDS to customers in Michigan and Illinois by year's end.

■ **BT North America, Inc.** recently completed the installation of a frame-relay network for supercomputer maker **Meiko Scientific Corp.** BT North America's Global Network Service is said to link local-area networks at Meiko's Waltham, Mass., and Bristol, England, sites using Transmission Control Protocol/Internet Protocol. This in turn enables developers to access computers on both sides of the Atlantic and to develop and debug code on an interactive basis.

Meiko previously used X.25 links that could not handle the speeds needed for such interaction.

Mobile use presents access challenges

BY JOANIE M. WEXLER
CW STAFF

Data communications managers immersed in hooking together disparate departmental networks to give users painless access to corporatewide data are soon to face an even thornier challenge — if they haven't already.

Users on the go have begun to demand the same access to client/server applications running across corporate internetworks that are available to them when they are sitting at their fixed work areas.

Accommodating these mobile users is problematic from at least three perspectives, depending on where the user is attempting to access the network: the sluggish speed of dial-up communications lines compared with local-area networks, the inflexibility of network addressing schemes and security.

Wandering users looking to extend their client/server computing to a hotel room or other noncorporate site have a bandwidth problem.

Though public carriers are working on increasing the speeds available in the public-switched network to become more LAN-like, services such as frame relay and Switched Multimegabit Data Service are currently slated for availability only at contracted corporate sites — not to individual users accessing the public network from ad hoc locations.

For example, Byer California, a women's clothing manufacturer in San Francisco with seven nationwide corporate sites, is becoming increasingly dependent on graphical information for viewing garments, said Michael Higgins, technical support manager. However, if a user travels anywhere other than the firm's corporate offices, "we have a bandwidth issue," Higgins said.

"A color picture of a garment is about 5M bytes, which travels well over Ethernet and frame-relay networks. But sending it over a 4.8K bit/sec. serial line is out of the question," he said.

While some modems are now claiming speeds of up to 57.6K bit/sec., "Many PCs won't run reliably at these speeds" over serial lines, noted John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Newark, Del.

Delmarva is attempting to run X Window System-based client/server network management applications remotely so that managers "don't have to drive to the network control center every time there is a problem." But he said most dial-up speeds are "brutal" on X applications.

Security-wise, because of "so many hackers out there," Ernst & Young Southern Management Consulting in Atlanta has not yet implemented remote dial-in ac-

Continued on page 67

Phone outage drives FAA to backup strategy

BY GARY H. ANTHES
CW STAFF

Disaster struck at 10:10 a.m. on Tuesday, Sept. 17, 1991, when AT&T cut over to diesel generators at a switching center in lower Manhattan, N.Y. The move, part of a power-saving agreement with Consolidated Edison Co. of New York, Inc., triggered a massive telephone outage that left air traffic controllers in the Northeast on hold and 85,000 air passengers on the ground.

Never again, said the Federal Aviation Administration (FAA), and two weeks ago MCI Communications Corp. unveiled its solution: a virtually fail-safe, dedicated national network to carry voice, data and radar images for the FAA's National Airspace System (NAS).

Called Lincs, for Leased Interfacility NAS Communications System, the network will provide digital paths that link 20 regional FAA centers, 80 major airports and a host of other FAA facilities and MCI backup sites that equal 265 major nodes and serve 5,000 FAA locations. Lincs will be the operational network of the FAA, and its principal users will be tens of thousands of air traffic controllers and pilots.

The network was designed to offer 99.999% availability, or no more than 5.3 minutes of downtime a year, and any one network failure is to be repaired in less than 30 seconds. The FAA's mostly analog network currently goes down for roughly 35 hours a year.

According to MCI, Lincs will achieve the higher reliability through a combination of redundant components and diverse routing at three levels. At the highest level, the Lincs National Backbone Network will connect 20 major air traffic control centers across the country, with traffic flowing over fiber-optic or microwave paths at T1 (1.5M bit/sec.) or T3 (45M bit/sec.) speeds.

Each of the 20 centers — called Air Route Traffic Control Centers (ARTCC) and serving regional "airspaces" — will be connected to at least two other centers to allow alternate routing. Each connection is made via two physically separate circuits — either two from MCI or one from MCI and the other from another long-distance carrier.

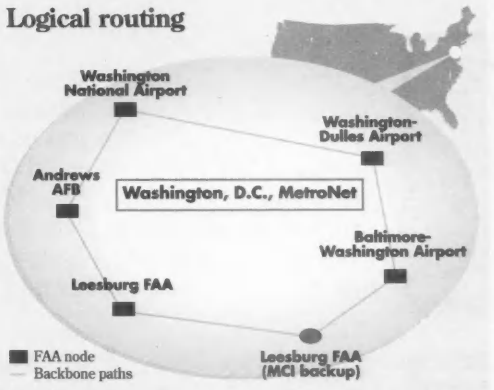
At the second level, each ARTCC will be mirrored by a nearby MCI backup node with an identical Newbridge Networks, Inc. 3600 series intelligent multiplexer, which itself contains redundant components. Every FAA facility served has a connection to both its regional ARTCC and to the MCI alternate node.

At the lowest level, ring subnetworks will connect airports in metropolitan areas or local access and transport areas. Each node will contain dual multiplexers and diverse paths to two other nodes.

Even the network management center is to be backed up, with the primary facility in Reston, Va., mirrored by a center in Sacramento, Calif.

"We'll be able to see remote sites instantaneously and diagnose remotely," said Mike Serbousek, branch manager for FAA Lincs at MCI. "Now, at remote sites, there's really no capability to tell when something's down unless someone is looking at it or it's alarmed."

Logical routing



CW Chart: Michael Siggins

Improved reliability

David Joyce, Lincs program manager at the FAA, described network performance data from existing carriers as "vague and not very current." He said real-time reporting from MCI via the network management centers will enable much better control and trouble response.

Single-vendor accountability will also contribute to reliability, Joyce said. He said the FAA's national network consists of arrangements with more than 400 long-distance and local exchange carriers. "Dealing with multiple vendors gets to be very nightmarish when you're trying to restore service," he said.

In addition to a big boost in reliability, the FAA hopes the 10-year, $856 million outsourcing deal will save operating costs. MCI said Lincs is slated to become operational initially in the Seattle airspace during the first quarter of next year. It is scheduled to be implemented in Southern California in the second quarter of next year and nationwide by the first quarter of 1995.

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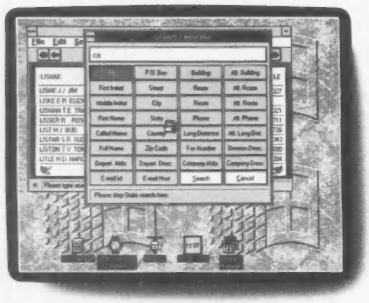
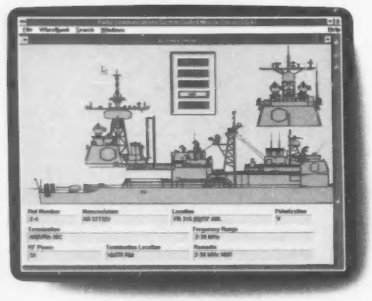


CHEVRON

Chevron's LAN system clients asked for a PC-based corporate directory to give PC users a "phonebook" similar to the one on their mainframe. The problem was there was no solution on the market that could accommodate 45,000 records with 30 fields each. To solve their problem, they used Visual Basic,™ MicroHelp Muscle for Visual Basic, VBTools, EditTool, ButtonTool, and Ramia Data Manager to create CLSctn for Windows. Now the users have an easy-to-use directory that allows them to access information by several different indexes.



U.S. NAVY

Navy ships were drowning in paper. The Chief of Naval Operations has estimated that it was costing $400 million per year to store, access, control and update the vast amounts of required technical information. Using Microsoft C, the Windows SDK, Microsoft Word for Windows and Excel, they developed the Interactive Electronic Technical Manual. It allows them to store all of the volumes of technical information on a CD-ROM, which can be accessed with the click of a mouse.

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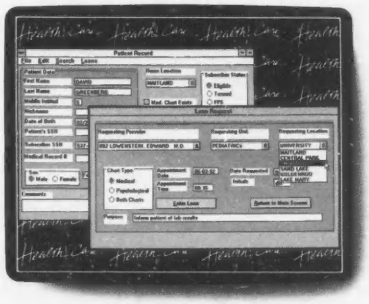
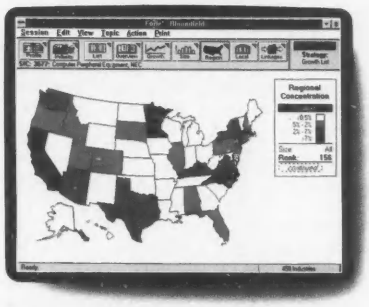


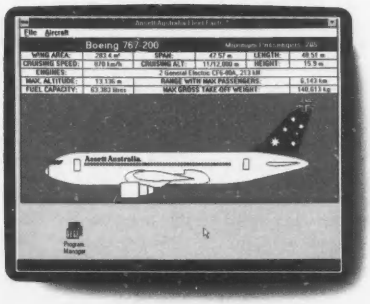
Orlando Health Care Group

Orlando Health Care is a 52-physician practice providing HMO services at 6 medical facilities. They had a problem tracking and updating over 100,000 medical charts, because patients can receive services at any of the facilities. So they used Microsoft Visual Basic, Q+E™ Database Library, Microsoft SQL Server, Microsoft LAN Manager, and Select Comm Server to create the Master Patient Index, a systemwide database. The new system saves time and helps the company provide better quality health care.



PHH Fantus

As an economic development consulting company, PHH Fantus analyzes enormous amounts of data. Some of their studies require the analysis of over 450 industries, and with the old manual system, it could take over 200 man-hours. To make their operation more efficient, they used Microsoft C, the Windows SDK and db VISTAIII Database Management system to design "Forté," a giant repository for data on a network server which is continually maintained and updated. Analysis that once took weeks now takes just hours.



Ansett Australia

As an airline, Ansett Australia needed to provide a better information system for its users. The old system forced users to wade through a large printed book for flight information. To solve this problem, they created the Ansett Travel Planner, with Microsoft Visual Basic, Windows SDK, Microsoft BASIC Professional Development System. Now it's much easier to update and access flight information. And there's a database that can store travel preferences for customers.

Otis Elevator

Senior Management needed a more accurate and timely way to consolidate all the financial information that was coming in from Otis companies around the world. So they used Microsoft C and Microsoft Excel along with Bridge Tool-Kit™ and Keyworks to create CFO, an executive information system. Now the analysts and executives can quickly access important data that'll allow them to spot and react to business trends.

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Telecommunications revamp heals New York hospital's ills

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — New York Hospital-Cornell Medical Center was granted a charter by Great Britain's King George III in 1771. And until recently, the telecommunications infrastructure at the nation's second-oldest hospital seemed nearly as antiquated as its ancestry.

The hospital was suffering some management and performance inefficiencies from the lack of a structured cabling plant that would allow network segmentation, explained Paul Epstein, data network manager.

Previously, the hospital ran one huge coaxial cable-based Ethernet network that supported a few hundred users "who would each be affected by a [data traffic] collision," he explained.

Barry N. Kriesberg, director of technical support services, noted, "We had wiring here that was almost like a rat's nest." The rat's nest carried the hospital's patchwork data networking infrastructure of Transmission Control Protocol/Internet Protocol (TCP/IP), Apple Computer, Inc. AppleTalk and Novell, Inc. IPX protocols.

Planning for growth

But that is changing. In the mid-1980s, hospital management asked its telecom division to develop a hospitalwide communications strategy. It wanted to not only support voice and data but also provide the bandwidth necessary to add future applications such as teleradiology — transmission of radiology images over the data network.

That strategy is being realized with multiple fiber Ethernet backbones, an AT&T unshielded twisted-pair cabling plant that was completed in December and a corresponding all-out shift to 10Base-T local-area networks. 10Base-T and fiber wiring hubs from Network Resources Corp. in Milpitas, Calif., and Cisco Systems, Inc. multiprotocol bridge/routers form the base of the data networking infrastructure.

Most of the hospital's 500 dumb terminals will be replaced by personal computers containing 10Base-T network adapter cards, Epstein said. While the myriad protocols are likely to remain, the hospital is trying to standardize on TCP/IP wherever possible, he added.

The hospital's new data center on 38th St. — which became operational this month — occupies two floors. An AT&T Systimax Premises Distribution System (PDS) links individual 10Base-T networks — Ethernet networks that run over unshielded twisted-pair — into multiple hubs on each floor. The 10Base-T hubs all feed into two fiber concentrators on one floor via the fiber Ethernet riser backbone.

The fiber concentrators link into a Cisco router, which sports a T1 wide-area connection to a matching router in a sub-basement that is shared by the hospital's 23-floor main facility at 68th St. and six other buildings. The sub-basement also houses multiple concentrators.

The hierarchy of hubs and concentrators allows the network to be segmented into 14 networks to boost performance and render the network more manageable, Epstein said.

Activity with standards

In addition, because of current standards body activity, the Systimax PDS wiring closet will likely allow an upward growth path to data transmission speeds of 100M bit/sec. An American National Standards Institute Fiber Distributed Data Interface working group is expected to approve a standard for running 100M bit/sec. over copper wiring by year's end.

Overall, the hospital uses 18 departmental file servers running Novell's NetWare 3.11 network operating system. It recently installed two Novell gateway links to the IBM 3090 mainframe.

Kriesberg said the telecom division, which operates independently of the information systems group, has spent $750,000 to move its telecom network applications and equipment, including telephone systems, data communications systems and wiring, to 38th St.

Payback could come by avoiding future changes to the network. In the past, Kriesberg explained, New York Hospital's telecom division was constantly playing catch-up with its tangled telecom infrastructure. With the networking overhaul, the hospital has ample room for growth.

Senior editor Joanie M. Wexler contributed to this story.

ON SITE

The New York Hospital-Cornell Medical Center
New York

- **Challenge**: To provide a long-term path for connectivity among New York Hospital's departments and buildings while consolidating IS operations under one roof.
- **Technology**: AT&T's Systimax Premises Distribution System, Northern Telecom's SL-100 PBX, Cisco routers, Novell NetWare-based file servers, an IBM 3090 Model 200 mainframe, an IBM SNA gateway, an IBM AS/400 minicomputer.
- **Expected results**: To provide an eventual path for teleradiology transmissions and other future applications; to improve voice and data connectivity among all departments and three main campuses; and to save 80,000 sq ft in data center floor space.

A healthier situation

New York Hospital's data center manager Bob Henn said the impetus for moving the facility's data center to two floors on 38th St. was twofold: By leasing less costly space on 38th St. and renting out 80,000-sq-ft space at its pricier 68th St. location for clinical use, the hospital can get a better return-on-investment.

In addition, the move means that the IS staff is no longer disjointed, with everyone now working together in the new data center location.

The hospital has also moved its payroll and other back-office operations to the new location.

In addition to an IBM 3090 Model 200 mainframe, the new data center houses a Northern Telecom, Inc. Meridian private branch exchange, another AT&T Systimax PDS cabling plant, several IBM 3990 disk controllers, strings of IBM 3390 disk drives, four Cisco Systems routers, three Novell network servers and an IBM Systems Network Architecture gateway.

A fifth router will soon be added to the hospital's White Plains facility to tie an IBM Application System/400 minicomputer to the mainframe over a T1 link, Henn said.

Although he would not discuss the cost savings expected from the data center move, he said productivity will be improved by having all of the hospital's IS staff members under the same roof.

THOMAS HOFFMAN

Unisys paves path for SNA-to-Unix connectivity

BY THOMAS HOFFMAN
CW STAFF

BLUE BELL, Pa. — Unisys Corp. moved last week to get a leg up on IBM in the world of connecting Unix platforms through IBM's on Systems Network Architecture (SNA).

Unisys introduced its Communications Access Processor (CAP), a network processor that reportedly integrates Unix and IBM SNA networks seamlessly across heterogeneous environments. CAP is said to combine multiple network architectures over a single SNA backbone and allow SNA users to access Unix while preserving their investments in hardware, software and training in SNA systems such as 3270 terminals. Unisys claims to do this by loading key SNA elements such as VTAM configuration into the CAP box. This reportedly eliminates the need for communications to pass through a mainframe.

Analysts said they expect the product to be a boon for Unisys. The Business Research Group, a Boston-based consulting firm, said SNA networks comprise 77% of large enterprise networks in North America. But many SNA shops are downsizing their corporate applications to lower cost, distributed systems based on open standards such as Unix, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect — all supported by the CAP system.

Carl Pitasi, vice president of the enterprise network strategy service at Gartner Group, Inc., a Stamford, Conn.-based consultancy, said CAP fills a major void for SNA connectivity. "It's the most significant networking product Unisys has come out with in the past few years."

CAP enables any IBM 3270 terminal in an SNA network to access Unix applications and let Unix applications look like mainframe programs. CAP can be used for simultaneous multiple-environment applications development, as well as managing and distributing data between SNA and Unix networks.

Jon Tempas, vice president for networking products marketing at Unisys, said CAP does not add to users' mainframe processing load because the communications processor includes the host System Services Control Point, which manages user access to applications. As a result, the network manages user sessions independent of the host computer.

> ANALYSTS EXPECT THE product to be a boon for Unisys.

Tempas said CAP helps reduce user costs by replacing expensive applications that historically have run on IBM mainframes. Users of personal computer local-area networks with Unix servers can also execute SNA applications using CAP, he said.

So far, Unisys has shipped six early units of CAP, including one to Baylor University and one to The Limited Credit Services in Columbus, Ohio. Limited Credit Services, which began testing the system in November 1991, went live in January this year, supporting 200 users.

CAP is slated to be available in September in two configurations. CAP 200, which supports up to 30 communications lines, is priced at $70,865. CAP 250, which supports up to 180 communications lines, is priced at $94,392.

Both systems provide SNA access to Unix System Laboratories, Inc.'s Unix System V, Release 4, initially by using Unisys U 6000 series Unix servers. Tempas said Unisys is working on a similar processor to facilitate Unix-to-Unisys 2200 series mainframe connectivity. That system is slated for availability in the first quarter of 1993.

Integrated network debuts for trading floor operations

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — A recently introduced digital switching system designed to integrate voice, data and emerging technologies such as videoconferencing and multimedia holds promise for use by traders and brokers in financial services companies.

Tradenet MX, a communications system designed by IPC Information Systems, Inc., is similar to a private branch exchange switching system.

Although the system is initially configured to support the large voice requirements for Wall Street trading floor operations, Tradenet MX can also accumulate the bandwidth necessary to support imminent videoconferencing, imaging and multimedia applications by aggregating individual links, according to Rick Bozzuto, executive vice president at IPC.

Glad to hear it

This could be good news for one user who has been testing the system since August 1991. Maggie Naymick, a voice communications analyst and Tradenet MX beta-test user at Cowan & Co. in New York, said the firm will likely purchase the system and will possibly add videoconferencing applications. Cowan & Co. uses Picturetel Corp. videoconferencing equipment.

Tradenet MX consists of a redundant array of Sun Microsystems, Inc. Scalable Processor Architecture reduced instruction set computing microprocessors, which are interconnected by a matrix of pathways.

The 25 million instructions per second microprocessor boards route calls through the system in less than 100 msec, according to the vendor.

Neil Olsen, director of software engineering at IPC, said each communications link in the system can handle 7.6M bit/sec. throughput. Each switching element supports 19 links.

Bozzuto said IPC is looking at adding other telecommunications capabilities, such as Asynchronous Transfer Mode and frame-relay interfaces. The system currently supports T1 links.

According to Bozzuto, Tradenet MX, formally unveiled in April, will begin shipping in October. Pricing is dependent on system configuration because each installation is customized.

Candle upgrade aids VTAM troubleshooting

BY ELLIS BOOKER
CW STAFF

LOS ANGELES — Candle Corp. recently upgraded its performance monitor for IBM's Virtual Telecommunications Access Method (VTAM).

Omegamon II for VTAM Version 150 includes a VTAM trace facility for ferreting out and reporting on errors in VTAM data streams. Candle developers said the trace facility obviates the need to invoke IBM's Generalized Trace Facility (GTF).

"Running traces the old way [using GTF] was such a pain, you often wouldn't do it," said Jerome Vitner, supervisor of network software at a major airline, which has been using the product since May.

In addition, the tool is simple enough for operations people to use.

"In the past, a systems programmer would have to be called in to run the GTF," Vitner said.

The trace function is one of several new features in the Candle product, which was officially announced in Chicago last month at the Enterprise Expo show.

> THE TRACE facility obviates the need to invoke IBM's Generalized Trace Facility

Like past releases, the latest version integrates with Candle's OmegaCenter software.

Omegamon II for VTAM Version 150 is available now and ranges in price from $38,500 to $67,000, depending on IBM host model.

Mobile use presents access challenges

CONTINUED FROM PAGE 63

cess to users, though users are "clamoring for access" to client/server applications and electronic mail, said Greg Evans, regional technical administrator.

Evans said he will likely implement remote network access when he sees security at the hardware level: encryption read-only memory on modems, bridges and other communications devices. The scheme he envisions would require the device to send an encoded signal identifying itself to a serving device to glean network access.

For users taking their office computers with them to other intracorporate sites, Higgins noted that reconfiguring a computer's network address becomes cumbersome.

"I have a vice president downstairs with a [Apple Computer, Inc.] PowerBook [portable computer]. When he travels to New York, he has a subnetwork address mismatch and has to reconfigure his PowerBook" by typing in the correct address change, Higgins said.

> WANDERING USERS looking to extend their client/server computing to a hotel room or other noncorporate site have a bandwidth problem.

"This assumes users can remember the address of the various locations they're in," Higgins explained, when generally, "anyone important enough to have a PowerBook" is not technically sophisticated.

Two efforts are under way to ease addressing and routing problems among fluctuating corporate Internet Protocol-based network segments by working groups of the Internet Engineering Task Force (see story below). However, as there is no corresponding body for users of other corporate protocols, such as Novell, Inc.'s IPX or Digital Equipment Corp's. DECnet, there is currently a gap for many mobile users.

In fact, Paul J. Severino, president of router maker Wellfleet Communications, Inc., recently told *Computerworld* that "one of the biggest issues our customers are asking us for help with is accommodating mobile users."

Internet group moves to address woes of traveling computer users

Users of large TCP/IP networks are fortunate to have the Internet Engineering Task Force (IETF) to iron out specific issues that crop up with the protocols.

For example, a project dubbed Mobile IP is under way by an IETF workgroup to allow traveling computers to maintain their identity when moved. Using the Mobile IP protocol, a computer will "temporarily assume a local address and have messages forwarded to it," said Greg Vaudreuil, secretary of the Internet Engineering Steering Group.

While the technical details have not been nailed down, the group expects a proposed Mobile IP standard by March 1993, he said.

A more mature effort called Dynamic Host Configuration was expected to be submitted for proposal last week. The protocol, which will run on users' computers and network servers, will automatically configure visiting users' computers with an appropriate network address, Vaudereuil explained. Currently, users must type in their new address information.

"This will go a long way toward helping corporate users move from location to location," Vaudereuil said.

JOANIE M. WEXLER

NEW PRODUCTS

Customer premises equipment

Ascom Timplex, Inc. has introduced the EntreeLink+ System, a high-performance network access system.

The EntreeLink+ provides full integrated voice, data and image transmission and has resident network management capabilities for private networking applications. Up to 44 I/O ports are included for flexible access to digital networks and to support applications such as high-speed local-area network data transfer.

According to the company, the product's synchronous and asynchronous data channel speeds of up to 1.984M bits/sec. and 19.2K bits/sec., respectively, meet most network transmission needs.

Prices start at $5,200.

Ascom Timplex
400 Chestnut Ridge Road
Woodcliff Lake, N.J. 07675
(201) 391-1111

Links

Xylogics, Inc. has introduced the Micro Annex ELS, a Unix terminal server.

The Micro Annex ELS is available with 8 or 16 ports and has the capabilities of a terminal server and an Annex communications server. Users receive the functionality of a multiprotocol asynchronous terminal server that permits the distribution of serial ports throughout their network and connection for modems, terminals, printers and other serial devices to an Ethernet. Features include the ability to access any Transmission Control Protocol/Internet Protocol or Digital Equipment Corp. Local-Area Transport-based network host, network management via the Simple Network Management Protocol, full modem controls and port password security.

The Micro Annex ELS costs $1,895 for the 8-port server and $2,495 for the 16-port server.

Xylogics
53 Third Ave.
Burlington, Mass. 01803
(617) 272-8140

Gateways, bridges, routers

Network Application Technology has added host security and bridging capabilities to its LANB/280.

The product is a stand-alone remote Internet Protocol router designed to extend central networks to remote Transmission Control Protocol/Internet Protocol (TCP/IP) local-area networks.

The host security allows the LANB/280 to restrict access to desktops, hosts and applications, and the bridging function allows the product to pass through non-TCP/IP packets. Point-to-Point Protocol over the serial link is used.

The LANB/280 costs $2,995 as a stand-alone unit.

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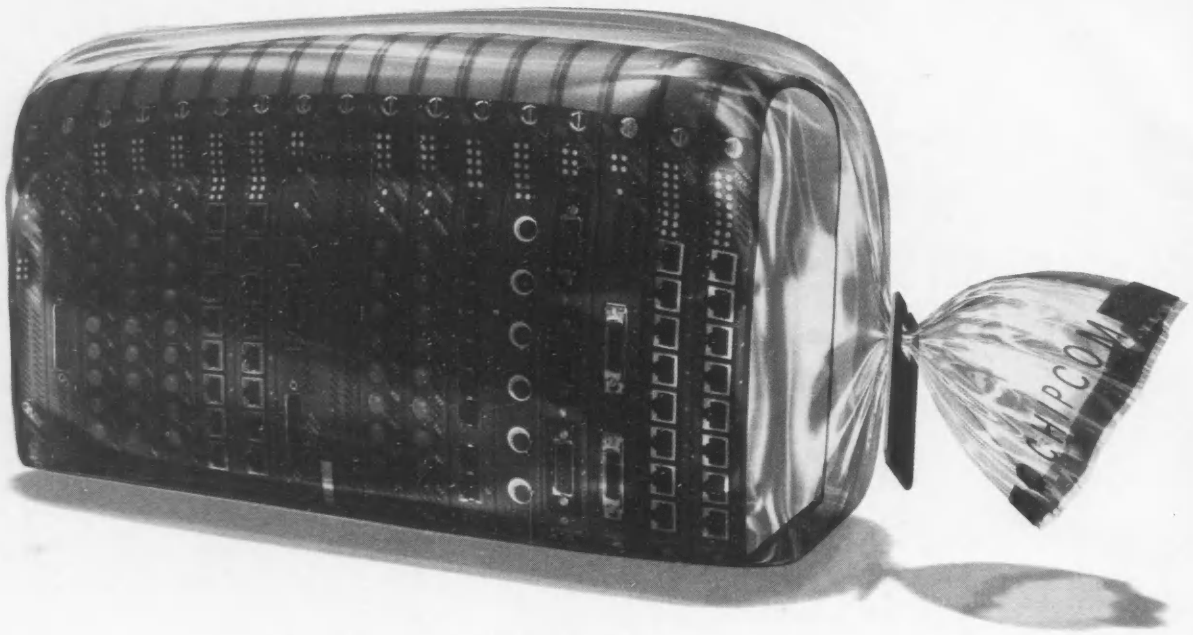

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Merger adds complexity to HMO systems strategy

BY JEAN S. BOZMAN
CW STAFF

CYPRESS, Calif. — A recent merger brought new complexity to information systems at $1.2 billion PacifiCare Health Systems, Inc., a Southern California health maintenance organization (HMO). Suddenly, PacifiCare became a mixed-vendor shop hosting both Digital Equipment Corp. and Hewlett-Packard Co. machines.

PacifiCare is organized as an umbrella organization for HMOs throughout the West. During the last five years, it grew from a $306 million organization to one that expects to have more than $1.7 billion in revenue in 1992.

Since 1989, it has operated a homogeneous computing environment based on DEC VAX computers. Anchored by a VAX 9000 running the production database, the computer room also has four VAX 6000s that host office automation software, including DEC's All-in-1.

The December merger with Health Plan of America, Inc. in Orange, Calif., brought an HP 9000 Model 870 inside this DEC-only shop, along with 15 new IS employees. The HP system has a Unix operating system, a Pick Systems emulator called UniVerse from VMark Software, Inc. in Framingham, Mass., and Pick applications. The HP computer was brought in because several of the HP applications were superior to PacifiCare's applications, IS managers said.

PacifiCare decided to undertake a comprehensive inventory of its applications, aided by Ernst & Young consultants who conducted an IS audit of the merger.

"One of the underlying premises of the merger is that we would look at the best and most functional systems," said Rich Kislowski, PacifiCare's chief information officer. "We didn't say 'someone's going to win, and someone's going to lose.' We asked which systems provided the most benefits and whether that functionality was on the DEC or the HP."

During the current

Continued on page 75

ON SITE

Richard Kislowski

PacifiCare
Cypress, Calif.

- **Challenge:** To manage merger that transformed the HMO into a mixed-vendor shop.
- **Technology:** DEC VAXs and the HP 9000, with users switching between environments via X Windows.
- **Results:** Some HP-based applications proved superior to the VAX-based packages during evaluation period and will be retained.

The almost paperless office

Firms use on-line access to reduce reliance on central printing resources

BY JOHANNA AMBROSIO
CW STAFF

The paperless office — that pipe dream of the early 1980s — may be coming to fruition after all, in a fashion. More and more users are discovering they can cut costs and improve service to their customers by providing on-line access to reports that have traditionally been printed in and distributed by the data processing center.

On-line access, which is one form of a discipline called output management, allows companies to scale back their central printing resources, sometimes dramatically.

But end users and their paper are not easily parted, so the technology must be accompanied by an aggressive selling campaign, according to people who have done it (see story below).

Nordstrom, Inc., a Seattle-based department store concern, started its on-line reports program more than two years ago. To date, the firm has saved approximately $2 million, according to Kurt Dahl, production services manager.

"When we started, our paper production was growing at over 21% annually, and we were printing over 7 million pages each month," Dahl said. Had they not done anything, that rate would have been about 10 million pages each month by now. Instead, they print about 4 million pages each month, he added.

The $2 million figure assumes a per-page cost of 1.2 cents, which is the actual paper cost. If other costs, such as storage and labor to retrieve files, are added, the cost can be calculated at closer to 25 cents per page.

Nordstrom is using InfoPak from Mobius Management Systems, Inc. to help automate the process of electronically distributing reports. Users can view and manipulate reports, as well as print them locally. In addition to the dollar savings, users get faster access to fresher information, and they can customize

Continued on page 74

Separation of worker and paper

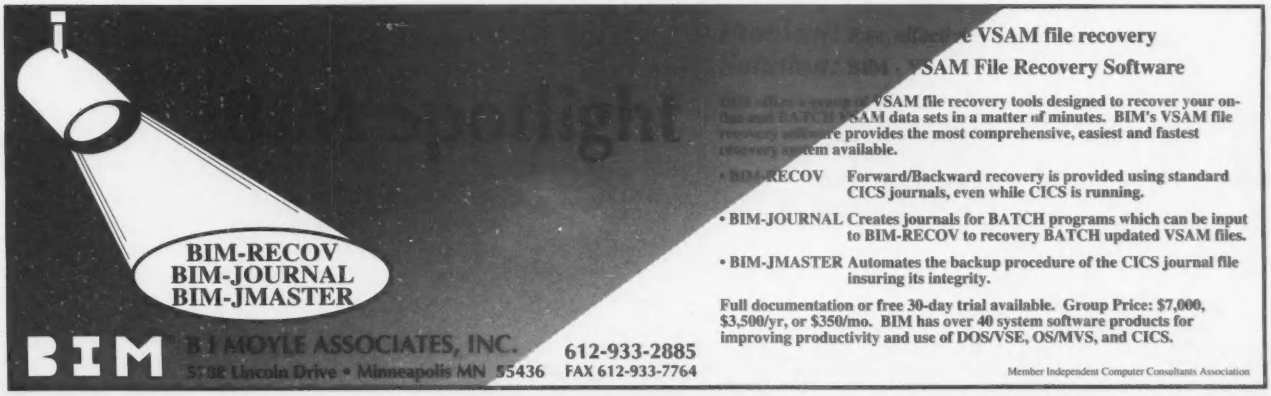
Technology is not enough to implement a successful on-line reports program; users must often be sold on the concept.

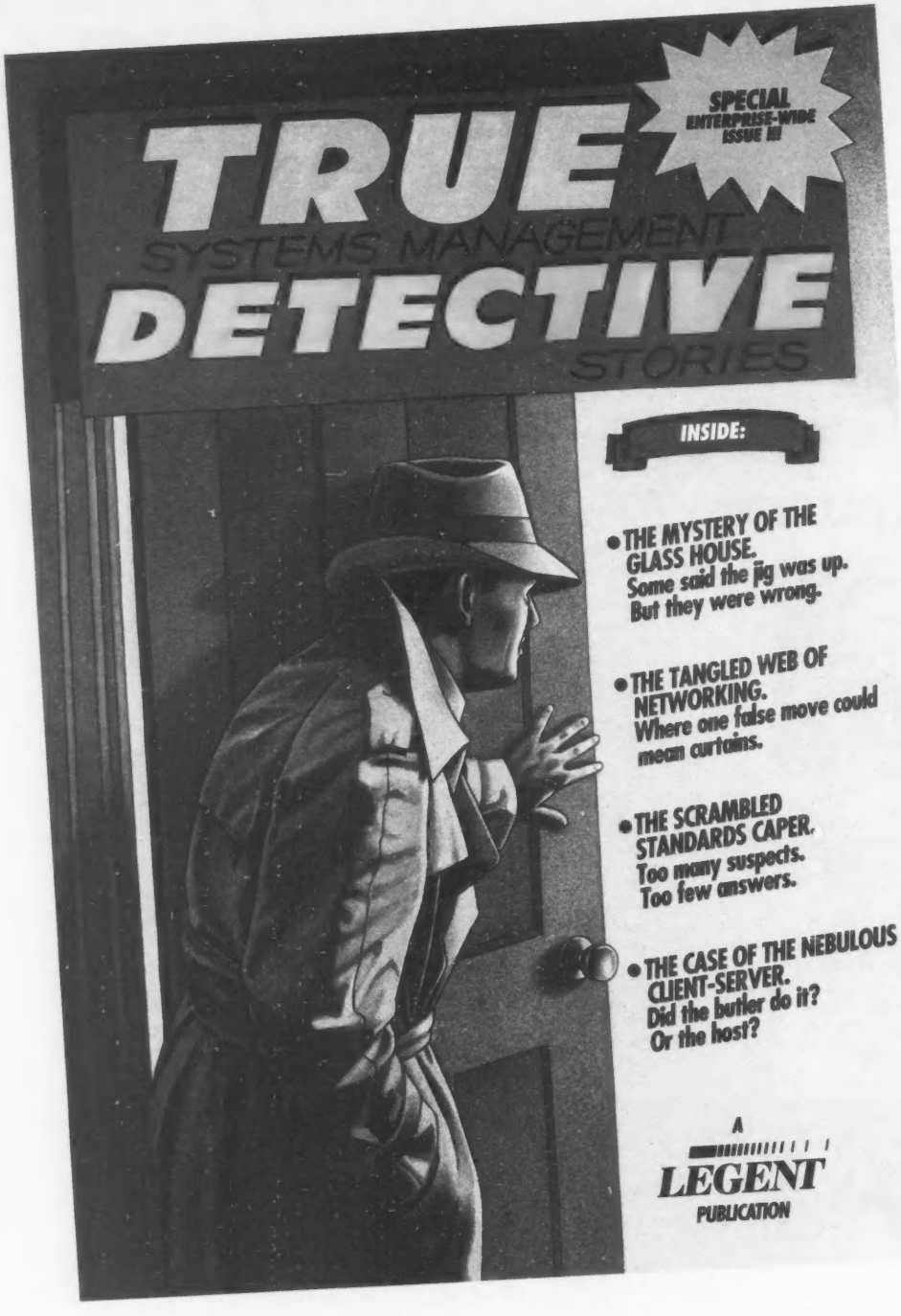
"I am personally convinced that taking away your kid's security blanket is easier than getting paper away from users," said Breck Churchill, a consultant at The Churchill Group in Overland Park, Kan. "The issue is not which technology you choose to replace paper; it's how you sell it. People hate change."

The following techniques, suggested by Churchill and by users who have instituted an on-line program, may make the selling job easier:

- Know the mind-set of your users — their needs and their fears.
- Be prepared for the most common objections, including scrolling limitations, notation requirements and the dislike of having to log on to get to information.
- Get your customers committed to a trial run. However, do not give them a cutoff date because that will immediately set up an antagonistic situation, and users will fight the program tooth and nail.
- Tie the program to efforts to help the environment, a tack successfully taken by Nordstrom. "We tell people how much paper they're saving and how many trees that represents," said Kurt Dahl, production services manager. Nordstrom also runs contests to encourage paper reduction, publishes an annual newsletter to keep everyone up to date and is about to begin planting trees for every percentage point of paper reduction.
- Work with upper management. Bob Petrohovich, a computer operations analyst at Whitehall Robins, helped begin an on-line program at his previous employer. "We first approached the management in each department to get the push going and explain cost and productivity benefits. Then we met with the users to explain the details," he said.

JOHANNA AMBROSIO

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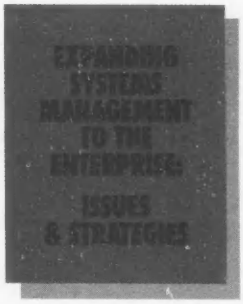

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LEGENT

ABC Radio seeks parity for IS teams

Commercial IS plays catch-up with broadcast systems that have brought market success

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — Two very different levels of technology users have emerged at ABC Radio Networks, but now, information systems managers hope to build at least some level of parity by driving the network's business processing systems to catch up to the program transmission systems.

The latter unit is using leading-edge technologies such as Digital Audio Transmission Systems to stay a step ahead of the network's competitors by broadcasting a wider variety of programs to affiliate stations. ABC Radio, a Capital Cities/ABC, Inc. subsidiary, claims that its broadcast technology has helped it gain a 42% share of radio advertising in the U.S. and a 37% share of commercial affiliate stations nationally.

Playing computer catch-up

But while ABC is now on the leading edge of broadcast technology, its computer systems fell behind the times during the 1980s, according to Jasmine Alexander, senior director of IS at ABC Radio. Alexander has been busy trying to integrate a slew of dissimilar systems to support ABC Radio's back-office environment.

When Alexander arrived in 1990 after directing IS at the Wilkes-Barre, Pa., *Times Leader* newspaper, ABC Radio's back office housed dozens of standalone Apple Computer, Inc. Macintoshes.

Since that time, the company has built a data center and linked more than 150 personal computers and Macintoshes over Novell, Inc.'s NetWare 3.11 network operating system. The network's finance and clearance applications run on an IBM 3090 mainframe in Capital Cities' Hackensack, N.J., data center, with links to the New York offices via a Novell Systems Application Architecture gateway.

Sending it out

Because ABC Radio's IS department has only five people, the bulk of applications development is outsourced to third-party vendors. For example, Fusion Systems Group Ltd., a New York-based systems integrator, developed ABC Radio's sales proposal software system.

That project was completed in April for the network's New York offices. The network's Los Angeles, Detroit and Dallas offices began using the software last month. The system accesses sales and marketing information from a Sybase, Inc. database running on a Digital Equipment Corp. VAX 4000 minicomputer, which is used to help generate sales proposal reports.

Alexander is busy with other projects. The network recently requested bids for a project to redesign the company's research systems.

ABC Radio is also in the process of installing a wide-area network that would link PCs, Macintoshes, a DEC VAX 4000 and an IBM RISC System/6000 at Satellite Music Network in Dallas via routers. That network will allow affiliate stations to better communicate with one another regarding commercial slots. In addition, the new network will smooth communications between affiliate stations and New York.

The project, scheduled to be completed later this month, will provide affiliate stations with access to a database of information that duplicates sales and other data housed in New York.

In addition to the DEC VAX, the broadcaster deploys four Hewlett-Packard Co. HP 1000 minicomputers that support commercial scheduling and office automation systems.

In fact, ABC Radio uses nine operating systems to support front-end and back-office operations. Alexander is hoping to whittle these down to two or three operating environments by the end of next year. Though no decision has been made yet, Alexander said the network is leaning toward Unix.

Front-end operations supporting program transmissions are directed by Richard Martinez, vice president of engineering at ABC Radio. For 10 years, the network has relied on Data General Corp.'s Eclipse S/140 minicomputers to carry the network's entire broadcast schedule to affiliate stations.

Though the minicomputers have not missed a beat, Martinez said, new systems are being installed to support a new wire news service called ABC Newswire being offered by ABC Radio, Reuters and Gannett Co. That service will begin today.

To support the increase in communications processing resulting from the new wire service, ABC Radio is now installing two HP 9000 Model 330 minicomputers. The systems will process messages sent to affiliate stations for distribution over a packet-switched network. Currently, the network transmits 300 messages per day. With the HP 9000s helping to process information for the wire service, the load will be increased to thousands of daily messages, Martinez said.

ON SITE

ABC Radio Networks
New York, N.Y.

- **Challenge**: To maintain the network's leading-edge approach to front-end IS operations while playing catch-up with back-office IS operations.
- **Strategy**: Use compression to increase satellite transmissions to affiliates; downsize back-office operations from seven operating systems to two.
- **Goals**: To double its national market share of affiliate stations; bring back-office operations into latest generation.

County rides imaging wave

BY ELLIS BOOKER
CW STAFF

SACRAMENTO, Calif. — Taking into account the increasing cost of storing and handling government paperwork, Sacramento County was able to justify the deployment of an imaging system in one of its departments.

End of story? Hardly.

Making correspondence and records of the county clerk's office available on-line is only the first application on a platform that goes beyond document imaging and will eventually be the storehouse for text, graphics, images, audio and video.

"It's our belief that anyone in the organization who is entitled to information should be able to access it," said Russ Waltrip, director of information systems for the county.

Waltrip picked the Image and Records Management (IRM) system from IBM as the platform for this environment.

The first IRM application supports the clerk of the board of supervisors and maintains the agenda minutes and correspondence flowing in and out.

The application uses a DB2 index on one of the two mainframe hosts, as well as five OS/2 servers running OS/2 1.3. The user workstations are IBM Personal System/2s running OS/2 Presentation Manager.

During his evaluation of the imaging market, Waltrip found "tons of LAN-based imaging applications" that would have worked if his needs had been restricted to one department.

"But when you're talking about multiple LANs, databases and servers . . . the ability to scale wasn't there," he said. Sacramento County currently has 49 local-area networks in place.

Asked about future IRM projects, Waltrip said he is excited but hog-tied by the current budget stalemate in California. "Yes, I have another application planned. But as of now, I don't have a budget," he said.

But he hinted that a likely next step will be the electronic storage of county property, utility line and voting maps. The maps would be available to the county's 60 or so departments.

True Blue client/server

Developed jointly with American Management Systems, Inc. in Arlington, Va., the IRM system uses a true client/server architecture with OS/2 hosts and OS/2 Presentation Manager client workstations.

IRM was designed to handle any binary large object that can be digitized: Objects are stored in their native format and run under the application needed.

IRM is the traffic cop, cataloging both the data object and its attributes so the calling application knows what kind of object is being retrieved and how to display it. It runs on IBM mainframes under IBM MVS/ESA or MVS/XA in conjunction with DB2 and CICS.

IBM also offers ImagePlus for MVS/ESA mainframes, AS/400 midrange processors and PS/2s on LANs.

The almost paperless office

CONTINUED FROM PAGE 71

their reports as well.

Whitehall Robins, Inc., a pharmaceuticals supplier in Richmond, Va., is expanding its on-line program to keep selected reports for up to two years, said Bob Petrohovich, a computer operations analyst. Right now, the time limit is 90 days.

Petrohovich's group is meeting with user groups to introduce the concept and work out details. "Certainly they want to keep everything for two years, but it's a give-and-take process," he said. He added that so far the on-line program has "cut printing expenses by a third."

Although the on-line programs increase the need for direct-access storage devices (DASD), Petrohovich said, "You know what it's going to take going in, so it's not a surprise." Other observers added that the cost of additional DASD and tapes is negligible compared with the savings.

That may be one reason why on-line access to reports seems to be an increasingly popular phenomenon. "We're seeing a tremendous interest in how to get information in electronic form out to end users," said Arnold Farber, president of Farber/LaChance, Inc., a consulting firm in Richmond, Va.

"To do this you need two types of tools: hardware that allows the boxes to be physically connected and to give access to data, on disk or tape, in minutes," he said. "You also need a software tool to search for and modify information on-line."

These software packages are available from many mainframe software vendors. They include Sysout Archival and Retrieval System from Goal Systems International, Inc.; CA-Dispatch from Computer Associates International, Inc.; Bundl from Legent Corp.; and Control D from 4th Dimension Software, Inc.

In addition, some new players are coming out with personal computer versions; one of these is Acquire from UniSolv in Phoenix. It runs on a PC local-area network.

But not even the best intentions always work. "We haven't had much success," said David Potemra, manager of computer processing at Dresser Industries, Inc. in Dallas. Though on-line reports have been available to end users for more than three years, few people outside the data center use the option.

"We're decentralized, and we charge back for our services. People pay for what they use, and they buy their own paper," Potemra said. "We can't force them to do anything."

Comdisco expands VAX recovery capabilities

BY MELINDA-CAROL BALLOU
CW STAFF

CHICAGO — While Digital Equipment Corp. is regrouping financially and managerially, Comdisco Disaster Recovery Services is adding a VAX 6620 system to its group of DEC equipment to expand its recovery options for DEC customers.

"It's a pretty significant addition," said Chuck Gladfelter, director of midrange systems at Comdisco. Comdisco previously had four centers in various locations. The smallest of these centers offered systems with a capacity of only six VAX units of processing (VUP), while the largest center provided systems with 60 VUPs. "This addition doubles the capacity of our largest center up to 120 VUPs and significantly adds to our capabilities," he added.

DEC subscribers make up roughly 15% of Comdisco's business, with the rest being mostly dedicated to purely IBM shops or shops that mix IBM platforms with those of other vendors.

The performance requirements of these subscribers are increasing, thus necessitating the equipment upgrade for Comdisco, according to Gladfelter.

"When we started, if you had 12 VUPs of capability, that was a lot. Today, we're running into lots of shops that have an excess of 100 VUPs. They are committing to DEC and continuing to move in that direction," he said.

Gladfelter added that there are two primary DEC markets for Comdisco: pure DEC shops and IBM subscribers who have DEC systems integrated with IBM mainframes.

IN BRIEF

Users install fewer but larger mainframes

■ The mainframe may not be dead, but the number of installed systems and sites is decreasing, according to a recent report from **Computer Intelligence.** The mainframe's peak was in 1989, and since then the estimated number of IBM or plug-compatible mainframes has declined 12%, from 27,274 to 23,920. During the same period, the number of IBM and compatible mainframe sites decreased 9%, from 16,631 to 15,114. Customers are installing fewer but larger mainframes and are combining multiple data centers into "megacenters," the report added.

■ **US West** has ordered a $10 million **Unisys Corp.** 2200/9222 dual-processor mainframe and has purchased two Unisys M9780 cached disk subsystems that provide 20G bytes of storage. The contract also includes services to help the telecommunications concern migrate.

■ **Unisys** has signed a three-year agreement to buy customized matrix printers from **Bull Italia.** The new model, the AP1371, is based on the existing Compuprint 1070 and has throughput of 540 pages per hour. The AP1371 is available immediately for use with Unisys mainframes, Unix-based systems and personal computers.

■ **Pace Membership Warehouse,** an Englewood, Colo.-based subsidiary of **Kmart Corp.,** purchased $100,000 worth of financial and construction software from **J. D. Edwards & Co.,** a firm in Denver that caters to IBM's midrange machines. Pace intends to build 28 new warehouses this year and will use the packages to schedule and track construction when building begins this month.

■ **Integris,** the systems integration unit of **Bull HN Information Systems, Inc.,** signed a $500,000 deal with the state of Mississippi to build imaging technology into the state's Public Employees Retirement System. The state hired Integris, based in Billerica, Mass., to construct a client/server architecture using Unix servers and DOS-based PCs as clients.

NEW PRODUCTS

System software

System Industries, Inc. has started shipping the S12480 Automated Tape Librarian (ATL).

According to the company, the S12480 ATL has 288 3480-compatible tape cartridges online in a compact silo, which can be expanded to an integrated system of more than 1,800 cartridges. Switch-selectable Improved Data Recording Capability with compatible data compression and expansion cabinets gives the product a storage capacity ranging from 58G bytes to more than 1T byte.

The S12480 Automated Tape Librarian unit costs $175,000.

System Industries
1855 Barber Lane
Milpitas, Calif. 95123
(408) 432-1212

Micro Technology, Inc. has introduced the StingRay Starter Kit Program.

The product consists of one StingRay server configured with a StingRay controller channel, plus three 2G-byte StingRay 200 storage elements and cabling and connection devices. The StingRay Starter Kit is an alternative for users who have Digital Equipment Corp.'s Hierarchical Storage Controllers and only require the addition of requester cards and RA drives to achieve their storage needs, the company reported.

The StingRay Starter Kit costs $35,000.

Micro Technology
5065 E. Hunter Ave.
Anaheim, Calif. 92807
(714) 970-0300

Executive Software, Inc. has announced Version 6.0 of Diskeeper/Plus, an on-line defragmenter for VAX/VMS.

New features include the ability to create Diskeeper/Plus jobs from a menu system or a command line interface at the DCL prompt, plus the option to locate the Diskeeper/Plus files on any disk in the directory. Templates can be made that consist of the most common Diskeeper/Plus job specifications used on a regular basis, and Version 6.0 allows for user-defined default values.

Prices range from $250 to $10,600, depending on configuration.

Executive Software
6th Floor
701 N. Brand Blvd.
Glendale, Calif. 91203
(818) 547-2050

BMC Software, Inc. has announced Release 4.2 of Recovery Plus for CICS and Recovery Plus for VSAM, products that recover CICS and batch VSAM 20% to 40% faster than previous versions, the company reported.

When CICS has files open for updating, Release 4.2 provides backups for these files, ensuring data integrity and offering 24-hour availability of VSAM files for CICS. Recovery Plus for VSAM Release 4.2 has a dynamic spill file for out-of-space conditions on journal or log date sets.

Pricing for Release 4.2 of Recovery Plus for CICS and Recovery Plus for VSAM starts at $4,000 and $2,000, respectively.

BMC Software
Suite 320
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77478
(713) 240-8000

Database management

Neon Systems, Inc. has introduced Shadow for DB2.

The product is designed to facilitate remote use of DB2 databases. DB2 applications can be run on systems that do not have DB2 installed. Extensive interactive facilities are included for controlling remote database access and can be used to analyze and debug SQL applications. Shadow for DB2 supports all TSO and batch DB2 applications.

Shadow for DB2 prices range from $9,950 to $55,000.

Neon Systems
Suite 4140
6464 Savoy Drive
Houston, Texas 77036
(713) 975-3563

Software application packages

Multitrak Software Development Corp. has released Version 2.8 of the Multitrak enterprisewide work management system.

The system provides the framework and the facilities for monitoring and managing projects, resources and services. Users can prioritize, schedule, and evaluate performance and productivity. Enhancements include extended project and resource attribute support, extensive screen redesign and FastPath navigation between screens.

Multitrak Version 2.8 begins at $40,000 for the IBM MVS mainframe version.

Multitrak Software
119 Beach St.
Boston, Mass. 02111
(617) 482-6677

Merger adds complexity to HMO systems strategy

CONTINUED FROM PAGE 71

evaluation period, IS executives are being guided by users at both HMOs and by the consultants. One conclusion reached so far is that the Health Plan of America claims application for individual doctors worked better than a similar PacifiCare system. However, a claims application for large group practices was deemed to be more efficient with the PacifiCare software.

It will take 12 to 18 months to rewrite many of the HP applications for the DEC machines. Many applications selected by the evaluation team will have to be rewritten by the firm's 125 programmers and by 10 contract programmers. Meanwhile, users who need to access both the HP and the DEC systems must toggle though four screens on an X Window System terminal.

The X terminals work well, but 500 employees had to undergo a week of training to use them, said Leo Collins, director of computer and communications technology at PacifiCare.

Some people had trouble adjusting to the sight of four 80-character, 24-line screens at once. "They start typing in the wrong window, and they don't understand why nothing's happening in the part of the screen they're viewing," Collins said. Users move between windows by clicking a mouse.

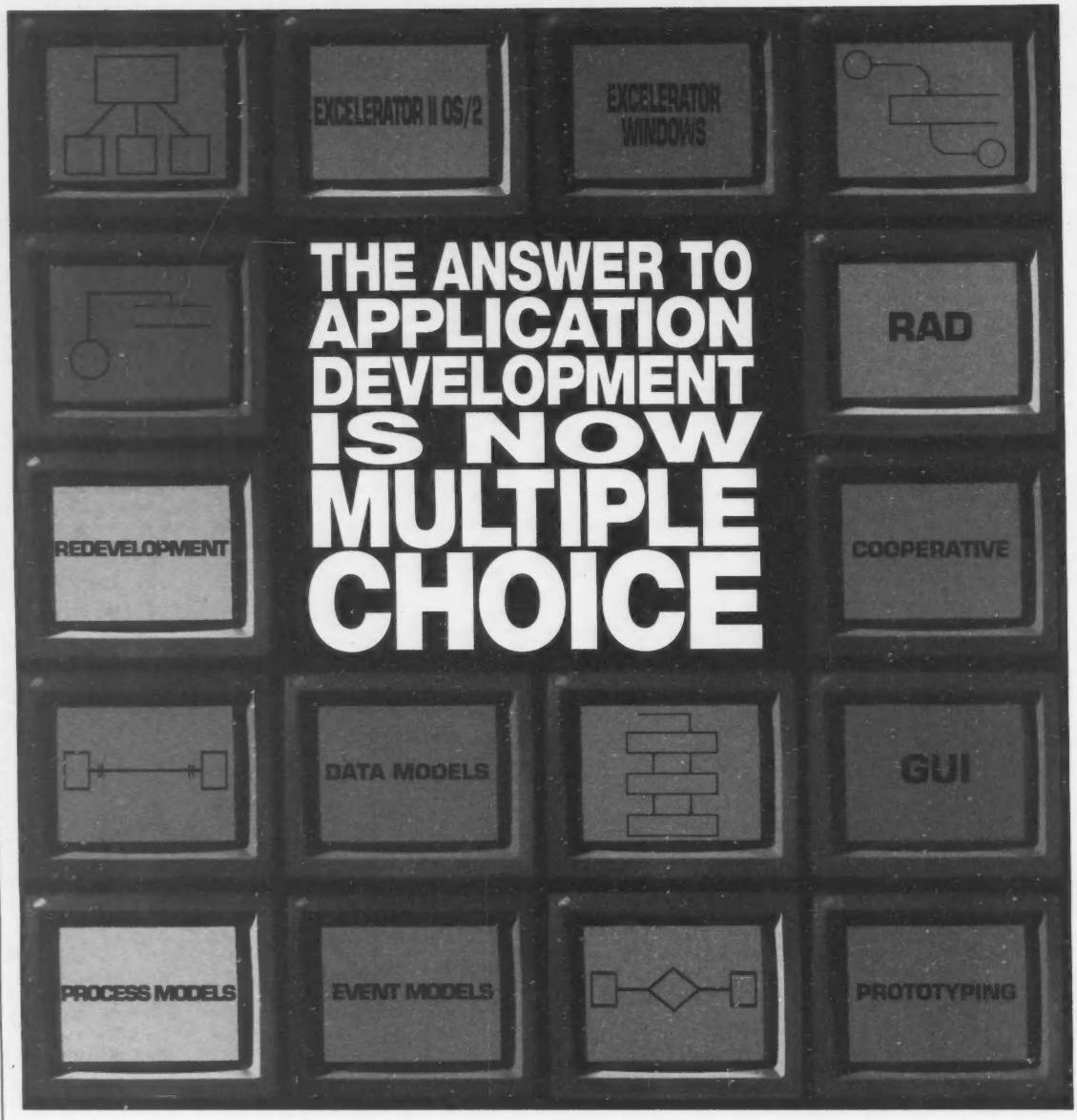
Kislowski plans to continue the coexistence of the DEC and HP systems, which are tied together with DECnet and Transmission Control Protocol/Internet Protocol networking protocols, for at least a year. But he wants an integrated environment in which the DEC hardware will handle most of the applications from both HMOs by 1994. At that point, the X terminals may no longer be necessary.

Ramping up

Meanwhile, PacifiCare's IS infrastructure is being readied for larger work loads. The VAX 6000s that host the firm's office automation software were upgraded early last month. The underlying Rdb engine, which supports on-line claims and customer profile systems, is being upgraded to release 4.0B this summer. The production database, which lists 800,000 members, requires 10G bytes of storage and is growing at the rate of 70M bytes a week. Overall disk storage is 230G bytes.

PacifiCare recently ordered one of the first DEC VAX 10000 machines; DEC announced the VAX 10000 last month, and it is scheduled to be installed by December. "It's a forklift upgrade," said Kislowski, who added that DEC's biggest VAX will boost processing power from 80 VAX MIPS to 120 VAX MIPS. The new machine will support 700 simultaneous users; the VAX 9000 supports 500 concurrent users, Collins said.

Uptime is also expected to improve, although PacifiCare's VAX 9000 provided two years of service. "The VAX 9000 never really lived up to the reliability we had hoped for," Kislowski said.



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COMMENTARY

Ann Winblad

Entering the enterprise era

Pundits are calling the 1990s the era of enterprise computing. It's the era in which the last 30 years of computing paradigms roll up into one contented family, allowing desktops access to all computing resources.

In this new computing paradigm, not only do the historical computing paradigms mesh, but corporate IS departments and end users also begin to blend into one noncontentious, heterogeneous computing environment.

The Berlin Wall that separates the microcomputer and mainframe environments is expected to simply disappear in this decade.

For those in corporations responsible for designing, building and maintaining this era of enterprise systems, new systems development strategies and tools must be built now.

During this progression toward enterprise computing, corporate IS programmers have continued to benefit from the improvement of tools to design,

Continued on page 80

Users blazing Amdahl's Huron trail

Although it has only about 30 users, the AD/Cycle alternative wins fans in mainframe shops

BY JEAN S. BOZMAN
CW STAFF

SUNNYVALE, Calif. — One year after its introduction, Amdahl Corp.'s Huron application development environment has gained a small but devoted following of users who like the product's productivity benefits but worry about whether Amdahl is a long-term player in the software business.

Conceived as an alternative to IBM's AD/Cycle, Huron is being marketed as an integrated tool kit for mainframe sites that boosts productivity through the use of business rules and prototyping. So far, fewer than 30 mainframe users have signed on. Some of these would-be pioneers seem less afraid of the new technology than they are relieved to make a dent in their application backlog.

Full steam ahead

Grumman Corp.'s Grumman Data Systems Division in Bethpage, N.Y., appears to have few reservations about Huron's potential as a platform-independent method of writing a new generation of applications.

"We've been laying out a strategy for migrating all of our systems to Huron," said Bernie Rachowitz, director of corporate information systems at Grumman Data Systems. "Huron will help us to migrate our old application code while still maintaining the IBM databases, including IMS and DB2."

Huron applications can be linked to many data sources, including flat-file databases, IBM-compatible relational database management systems and, soon, Unix databases, through the use of a built-in RDBMS. In theory, applications can be written once and run in MVS or Unix environments without change.

HURON PRODUCT CLOSE-UP

- **PRODUCT:** Proprietary application-development environment for mainframe sites running IBM's MVS operating system and Unix.
- **VENDOR:** Amdahl Corp.
- **INTRODUCED:** March 1991.
- **KEY COMPONENTS:**
  - **Huron Metastor Facility:** Acts as data repository keeping track of where data is stored.
  - **Huron Rules Language:** An abbreviated procedural language with fewer than 20 basic rules or statements.
  - **Huron Database System:** A relational database specifically designed for use with Huron.

Grumman's old applications are largely written in Cobol; new applications will be written in the Huron programming language, Rachowitz said. Fewer than 10 Grumman programmers, working with Amdahl software engineers, developed prototype applications, some in only six weeks. A 26,000-line program became a 1,000-line program in Huron, using 300 business rules, Rachowitz said.

Grumman's two-month evaluation of Huron ended in December, and a few Huron programs are slated to go into production this year. Programmers are able to tackle Huron programming after a week or two of training, users said, but full mastery of Huron may take several months.

During the next two months, the number of Huron programmers at Alberta Treasury in Alberta, Canada, will grow from six to 30 because IS managers said they think Huron can shorten the development cycle, according to Neville Rogne, manager of direct customer banking for 140 branch banks. Alberta Treasury began a four-month evaluation of Huron in February and signed up in June. "We went into the trial with an assurance that we would see a 3-to-1 improvement in development time," Rogne said. "We saw about a 5-to-1 ratio on average."

However, Alberta Treasury also found a performance penalty associated with Huron's ease-of-use features. One Huron-based CICS program ran against a 1.5 million-row VSAM file and finished slower than expected, although Rogne would not quantify the performance delay. "Obviously there is a trade-off to get that kind of flexibility," Rogne said, "but it was an acceptable speed at an acceptable cost."

Not a bed of roses

There is a downside to embracing a new technology like Huron, analysts noted. It is not clear whether the product will be a success in the market because there is so much competition.

The system requires an entirely new — and proprietary — programming discipline. Programmers must use a high-level rules language, an on-line data repository and an extended RDBMS to get work done.

Last month, Huron was enhanced with the addition of Unix support for both mainframe and workstation systems. The desktop version of Huron will reduce entry price from $525,000 to $10,000. Amdahl's best strategy for selling Huron is to couple Huron with the sale of systems integration or consulting services, analysts said.

Object-oriented tool smooths CASE models

BY GARRY RAY
CW STAFF

Developers of real-time systems will be able to get early feedback on their designs with a new object-oriented computer-aided software engineering (CASE) tool announced last month.

Called Objectime, the tool is the result of a multiyear development effort by Bell-Northern Research Ltd. in Ottawa. Bell-Northern is the research and development subsidiary of Canadian telecommunications company Northern Telecom Ltd.

According to senior marketing manager Garth Gullekson, Objectime, which has been under development since 1986, is widely used in both companies.

Objectime allows graphical modeling of applications using Bell-Northern's real-time object-oriented modeling methodology. The methodology comprises an application's structure, which specifies the encapsulated components of a system; its behavior, which specifies how these components will react to events; and its inheritance, which allows components and behaviors to be reused. "We wanted people to focus on inheritance and encapsulation from Day 1," Gullekson said.

Once a design has been completed, Objectime provides an integrated runtime environment for validation and execution of the model.

Currently available on Sun Microsystems, Inc. Sun 4 workstations and Hewlett-Packard Co.'s HP 9000, Objectime pricing begins at $20,000.

Cadre's C workbench merges 6 modules

BY GARRY RAY
CW STAFF

Programming in C may be a badge of honor among coders, but a new tool from Cadre Technologies, Inc. may add to C the same sort of coding discipline that Cobol shops have known for years.

Called Ensemble, the new C workbench from Providence, R.I.-based Cadre is an assemblage of six modules that can be used to design new programs or to reverse-engineer and enhance existing C programs, said Caine O'Brien, director of product marketing at Cadre. Together, the tools produce flow diagrams, software metrics and documentation, O'Brien said.

Two Ensemble modules, System Understanding and Function Understanding, are said to read existing C programs to determine general and specific program structure, including all data structures. Another, the Construction module, can build ANSI-compatible C code from the Ensemble design environment, while Test Generation and Test Verification can execute a program.

Untangling code

Ensemble beta-test user Doug Smith, a senior software engineer at General Electric Co.'s Aerospace Division in Syracuse, N.Y., used the workbench to reverse-engineer a tactical software system provided by a subcontractor. "It gave us the ability to look at the design and see what spaghetti code really looked like," Smith said. The program "was not very well-structured," he said.

Smith added that without Ensemble, reverse-engineering the 25,000 lines of code "would have been done by hand. . . . [The workbench] did overnight what would take a human being a couple of weeks."

Emphasizing the benefits of reverse- and forward-engineering existing C programs, tools like Ensemble are "beginning to turn C into something more professional and are giving [the language] more discipline," said Adrian Bowles, vice president and director of the advanced software development research service at New Science Associates, Inc. in Westport, Conn. He said that despite a massive movement recently toward C programming, "the world of C programmers hasn't been characterized by discipline."

Available on the Sun Microsystems, Inc. Scalable Processor Architecture FCS, Ensemble will also be shipped for IBM's AIX, Digital Equipment Corp.'s Ultrix and Hewlett-Packard Co.'s HP/UX operating systems by the fourth quarter. Pricing for each module ranges from $3,000 to $6,000.

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Quality improvements are dramatic. Users are getting more of what they need to run their businesses. Systems get up and running easier and faster.

As for maintenance, a Gartner Group study showed that, even back in 1990, more than 80% of IEF developers were getting gains of from 2-to-1 to 10-to-1.

Now, develop on PC and generate for DEC/VMS, UNIX. TANDEM, WINDOWS available soon.

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Developers give IEF highest rating in COMPUTERWORLD.

COMPUTERWORLD magazine's "buyer's scorecard" showed that developers ranked the IEF first among all I-CASE products in the study, particularly in the areas of application quality, programmer productivity, and value for the dollar.

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The kit is priced at $10,000 (limit one per customer company). That's about one-half the regular cost of the toolsets.

If you're not convinced that the IEF can work for you, here's a chance to see for yourself—at a special low price and (with the new tutorial) in a very short time.

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Government purchasers, please reference GSA #GS00K92AGS5530

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VP, Information Technology
AETNA

"MERLIN is mission-critical—the most far-reaching business systems initiative we've ever undertaken. Over 400 transactions are in production, with 800 more to be added in the next three months. We could not handle this scale and complexity without IE/IEF."
Wal Budzynski
Head of Operations, Systems/Computing
Rolls-Royce Aerospace

"With previous methods, we would have had to compromise on an 'okay' 10-screen Lease Accounting system. With the IEF, our users got everything they wanted—an outstanding 40-screen system—in the same time. They are requesting the IEF for all future systems."
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Sr. VP, Information Systems
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"The IEF offers dramatic improvements in productivity, yet it's easy to learn. One example: We trained 23 developers, including 18 new hires, and then completed a large order processing system—300 transactions—all in only 20 months."
Venkat (Vinnie) Tiruviluamala
Director, CPC/CPPC Information Systems
SONY Corporation

"We used an IEF frequent flyer template to build our 'Canadian Plus' system. A major redesign, estimated at 4-6 months using previous methods, took less than a month. Now we're providing better customer service, and maintenance costs are greatly reduced."
Bill Palm
President, Canadian Technology Services
Canadian Airlines

"Our new Customer Order Services Marketing Information System—over 500 transactions and 250 entities—is in production. Quality is excellent and our users are very pleased. Dedicated people armed with the IEF advantage have made COSMIS a success."
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Margaret Kubaitis
Research Programmer, IS&S
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K. E. Peacock
Data Administrator
City of Saskatoon, Saskatchewan

IN BRIEF

Sun gets new C tool

■ **Metaware, Inc.** in Santa Cruz, Calif., will be providing its C compiler for **Sun Microsystems, Inc.**'s Scalable Processor Architecture (SPARC) and Solaris versions of CodeCenter, an integrated C development environment from Cambridge, Mass.-based **CenterLine Software, Inc.** Called CenterLine-C, the compiler will be offered as an alternative to the C compiler that was previously included with Solaris 1.0 and 2.0.

■ Fourth-generation language (4GL) provider **Progress Software Corp.** in Bedford, Mass., and **Object Design, Inc.**, the Burlington, Mass., vendor of the Objectstore object-oriented database management system, have announced a strategic development and marketing agreement that will combine the two products. The firms said it marked the first integration of a 4GL and an object-oriented DBMS.

■ Cobol vendor **Micro Focus, Inc.** in Palo Alto, Calif., and **Hal Computer Systems, Inc.** in Campbell, Calif., have inked a deal that will allow Hal to resell a variety of Micro Focus Cobol products for its forthcoming SPARC Version 9 computer systems.

■ Database tool vendor **Uniface Corp.** in Alameda, Calif., has joined the independent software vendors program at **Oracle Corp.** The agreement provides both companies with a means to share technology, marketing and sales activities.

■ Cobol tool vendor **Netron, Inc.** in Downsview, Ontario, has acquired Toronto-based **Noma Industries'** 50.1% controlling interest in Netron, according to the company. Noma President Rudy Koehler said the sale was completed in order to "focus on efforts in our core manufacturing and distribution businesses." Effective with the sale, Netron became 100% privately held, according to company documents.

Winblad

CONTINUED FROM PAGE 77

code, reorganize and maintain legacy Cobol systems. But the programmer's workbench, gradually built over the last few decades, is not adequate for enterprise programming.

While programming approaches have remained relatively the same on legacy systems, commercial developers of PC applications systems have completed much of the change from an application-centric to a task-centric programming style. This new-style, object-oriented programming has become de rigeur on the PC. First C and now C++ have become the core component of the PC programmer's workbench.

Design, coding, debugging and management of complex class hierarchies of C++ did bring some additional challenges to the programmer. However, the rapidly improving programming tools, substantial sources of class libraries and evolving operating systems have allowed class libraries to intermingle with standard APIs and foundation classes, mitigating much of the challenge of object-oriented programming.

As a minor participant in the creation of the Cobol legacy, I can empathize with the large intellectual investment in code and programmer training. But corporations that ignore the enterprise computing model and the new object-oriented architectures will be trapped between two different worlds.

Currently, reusability benefits are far from the mainframe legacy. The most successful strategy has been to package object-oriented trappings around tired old systems using object-based GUI front ends. This approach has been referred to as shrink-wrapping or freezing the legacy code, making changes on the outside as if the legacy code were one large object.

Early programming tools such as those from Easel simply glued PC access to old data, but newer programming tools such as those from Powersoft and Gupta support the full object environment available on the PC. These new tools also provide additional class libraries and support application deployment in a client/server environment independent of the DBMS, although an RDBMS underpinning is assumed.

Not easy decision

Building the core enterprise programming environment does require some choices. These include whether a cross-platform (multiple client) tool or a "best of breed" product should be chosen for each platform.

A comprehensive workbench may also require buying into a single vendor's foundation strategy, such as the forthcoming Microsoft Application Framework, or selecting individual class libraries a la carte.

An important future of the workbench strategy will ultimately require one or more object messaging approaches, such as OLE, ToolTalk or Taligent. And developers will have to commit either to learning C++ and multiple class libraries or to focusing on less intensive API strategies using C or C++ code generation tools.

With the arrival of off-the-shelf tools from compilers to object-rich development environments, Cobol programmers will have less need to learn C and deal with the 800 APIs in Windows or hundreds of Unix APIs. The shift in the 1980s to RDBMSs was more difficult.

If they haven't already, programmers should now turn their attention to evaluating and selecting from this new generation of off-the-shelf, object-oriented programming tools. Along with this must come strategies for integrating legacy systems.

The benefits are real and available to both programmers and users. Programmers will obtain the benefits they need to get their work done. And end users will become active participants in the information of the enterprise.

Winblad is a partner at Hummer Winblad Venture Partners in Emeryville, Calif., and a co-author of *Object-Oriented Software*, published by Addison-Wesley.

Object innovators

Winners of the *Computerworld* Object Application Awards Program were honored at the recent ObjectWorld Show in San Francisco.

The winning companies were represented by, from left, Robert Rhodes at Wacker Siltronic Corp. in Portland, Ore.; Jeffrey A. Jones at Kash-N-Karry Food Stores, Inc. in Tampa, Fla.; Martin Ruexsch and Hermann Schmitt at Landschaftsverband Rheinland in Koln, Germany; Peter Meenan at General Electric Corporate Research and Development in Schenectady, N.Y., and Boyd Inman at United Artists Theatre Circuit, Inc. in Englewood, Colo.

NEW PRODUCTS

Compilers

TeleSoft has announced RISC-Ada/SPARC/R3000 and RISC-Ada/SPARC/80960, real-time Ada compiler products.

Using Sun Microsystems, Inc.'s Scalable Processor Architecture-based workstations and servers, the products develop real-time applications for the R3000/R4000 and Intel Corp.'s 80960 processors. TeleSoft's proprietary Optimizing Compiler Technology is included, which generates faster target code.

These cross-compilation systems also have an X Window System-based graphical user interface, an Ada-knowledgeable programming environment and the AdaTracer graphical source-level debugger.

Pricing ranges from $21,000 to $42,000.

Telesoft
5959 Cornerstone Court W.
San Diego, Calif. 92121
(619) 457-2700

Application development tools

XVT Software, Inc. is shipping Release 3.0 of the XVT Portability Toolkit and Version 1.1 of the XVT-Design graphical design tool.

Users can design an application and run it on six different graphical user interfaces and more than 26 different platforms. The tool kit provides an enhanced approach to window creation, which allows for dynamic and resource-based window definition and creation and hierarchical menu support.

Pricing for Release 3.0 of Portability Toolkit ranges from $1,450 to $4,400; XVT-Design ranges from $1,200 to $2,900.

XVT Software
4900 Pearl E. Circle
Boulder, Colo. 80308
(303) 443-4223

CenterLine Software, Inc. has unveiled CodeCenter 4.0, a Unix C programming environment.

CodeCenter 4.0 offers users a variety of capabilities for writing, building, prototyping, testing, debugging and maintaining C programs in heterogeneous development environments.

Improvements include CenterLine-C, an optimizing ANSI C compiler for Sun Microsystems, Inc. Scalable Processor Architecture workstations, advanced dynamic code and data visualization capabilities, enhanced debugging and faster object code runtime error checking.

CodeCenter 4.0 is priced at $2,995.

CenterLine Software
10 Fawcett St.
Cambridge, Mass. 02138
(617) 498-3000

Information Builders, Inc. has announced Release 2.5 of Level5 Object for Microsoft Corp.'s Windows 3.1.

The product is object-oriented, knowledge-based application development software. New data interfaces and faster execution provide users with the large production applications facilities offered in Windows 3.1. Level5 Object Release 2.5 supports full implementation for SQL, external program interfaces, decision support rules and stored procedures.

The product costs $995.

Information Builders
1250 Broadway
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BUYERS' SCORECARD

PacBase, IEF lead rising CASE satisfaction

BY DEREK SLATER
CW STAFF

Slow growth in the computer-aided software engineering (CASE) market has raised questions about whether the technology has lived up to its promise. However, user satisfaction with leading integrated CASE (I-CASE) products is on the rise, according to a Buyers' Scorecard poll.

All four of the products included in a similar survey last year [CW, April 22, 1991] earned higher overall scores this time around.

CGI Systems, Inc.'s PacBase tool set clambered into a first-place tie this year, with an overall score of 76, up five points from the previous poll.

Last year's winner, Texas Instruments, Inc.'s IEF, gained two notches in its overall score, up from 74 to 76, to tie with PacBase. (1991 scores have been converted to base 100 for comparison.)

Finishing out the survey were Arthur Andersen & Co.'s Foundation products at 68, up three points year-to-year; and KnowledgeWare, Inc.'s Information Engineering Workbench/Application Development Workbench (IEW/ADW) at 66 (a rise of three points).

Another significant I-CASE player, Intersolv, Inc., was created by last year's merger of Index Technology Corp. and Sage Software, Inc. Intersolv offers a modular product line. Its ratings are not included in the charts because an insufficient number of users who employ both the design and the code generation modules responded to the survey.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assigned 1-to-10 ratings based on their satisfaction with their I-CASE systems in 16 specific areas.

The users also rated the importance of each category. (See the methodology on the following page for a complete explanation of the scoring process.)

CGI Systems' PacBase topped a number of important areas, including ability to increase speed of applications development. Recent enhancements to the product line include the introduction of RE/Cycle, a repository-based maintenance program for Cobol applications that was released in April.

PacBase's repository also earned the top score in the survey (8.9). PacBase emphasizes maintenance and production of applications rather than high-level design, according to the company. A relative weakness is ease of use, in which PacBase finished third.

IEF users noted the TI product's high level of integration and ease of use; IEF finished with the highest ranking in both areas. In contrast to PacBase, IEF emphasizes a rigorous high-level methodology; the product topped the planning, analysis and design features category.

Arthur Andersen's Foundation captured its best marks in responsiveness of vendor service and support for local-area networking. Foundation has been sold primarily in conjunction with the company's extensive consulting services, though Digital Equipment Corp. has recently begun to resell elements of Foundation as part of the DEC Cohesion development strategy [CW, May 11, 1992].

Arthur Andersen has also added a new version of its design tools that runs under Microsoft Corp.'s Windows environment.

Full life cycle CASE tools

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: PacBase, 30; IEF, 43; Foundation, 18; IEW/ADW, 38.

Total possible score **100** Mean score **72**

Product	Highest ratings	Lowest ratings
CGI Systems' PacBase SCORE 76	Data repository capabilities Support for local-area networking Ability to increase application quality	Training time required Overall ease of use Documentation
TI's IEF SCORE 76	Code generation capabilities Integration of life cycles Planning, analysis and design features	Support for local-area networking Training time required Documentation
Arthur Andersen's Foundation SCORE 68	Responsiveness of vendor service Support for local-area networking Integration of life cycles	Code generation capabilities Ability to increase programmer productivity Training time required
KnowledgeWare's IEW/ADW SCORE 66	Planning, analysis and design features Ability to increase application quality Overall ease of use	Support for local-area networking Efficient programming capabilities Ability to increase speed of development

KnowledgeWare's IEW/ADW, which emphasizes a flexible development methodology, earned a strong score in ease of use. The company announced a graphical user interface generator earlier this year.

Other recent enhancements announced by KnowledgeWare include an OS/2-based maintenance program and an Ada code generator.

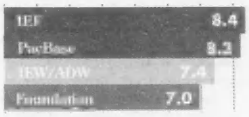
Users rated the IEW/ADW and Foundation products in a third-place tie in value for the dollar — well behind PacBase and IEF. •

RATINGS IN ORDER OF IMPORTANCE

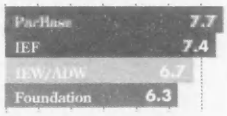
PacBase shines in four of the most important areas, particularly in data repository capabilities.

User importance rating:

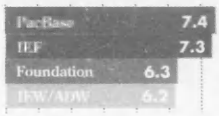
8.7 Ability to increase application quality



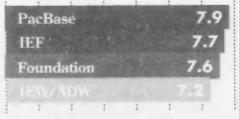
8.4 Ability to increase programmer productivity



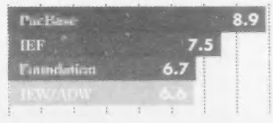
8.3 Ability to increase speed of applications development



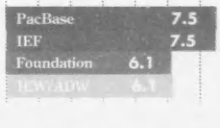
8.2 Responsiveness of vendor service



8.2 Data repository capabilities



8.2 Value for the dollar



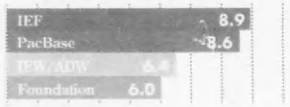
RATINGS IN ORDER OF IMPORTANCE

(Full life cycle CASE tools, continued from previous page)

Texas Instruments' IEF tops five of the remaining 10 ratings categories. The four products are widely differentiated in support for local-area networking, but users rated that as one of the less important criteria.

8.0 Quality of technical support

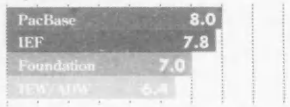
7.8 Code generation capabilities



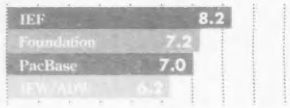
7.6 Documentation

8.0 Planning, analysis and design features

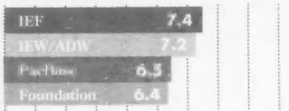
7.7 Efficient programming capabilities



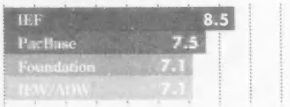
7.5 Effectiveness of testing



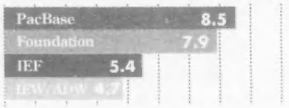
8.0 Overall ease of use



7.9 Integration of life cycles within product set



7.6 Support for local-area networking



7.5 Training time required to use product

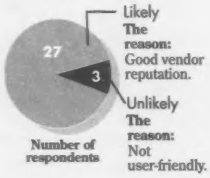
Loyalties

Would you buy the product again?

(Reasons are based on the most frequently stated responses.)

PacBase

Responses: 30



Likely
The reason: Good vendor reputation.

Unlikely
The reason: Not user-friendly.

IEF

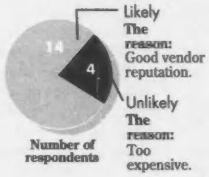
Responses: 43

Likely
The reason: Best on the market.

Unlikely
The reason: Not state of the art.

Foundation

Responses: 18

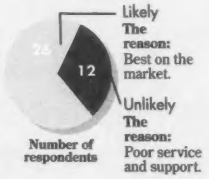


Likely
The reason: Good vendor reputation.

Unlikely
The reason: Too expensive.

IEW/ADW

Responses: 38



Likely
The reason: Best on the market.

Unlikely
The reason: Poor service and support.

Verbatim

What do you like best/least about this product?

(Responses are based on the most frequently stated answers. Quotes are selected from users' responses.)

PacBase

Likes

Good repository

"The repository avoids duplication of code and data elements, and the specifications are reusable."

Dislikes

Hard to learn

"The learning curve is high."

IEF

Likes

Good integration

"The total integration of the life cycle yields a quality product as an end result."

Dislikes

Poor report generation

"The report generation capabilities are the biggest weakness."

Foundation

Likes

Good integration

"It lays out the steps very well."

Dislikes

Hard to learn

"It isn't user-friendly."

IEW/ADW

Likes

Good integration

"Nicely integrated — it takes you from the analysis stage to the finished product."

Dislikes

Lack of integration

"Going from analysis to design is difficult."

Vital statistics

Total number of respondents: 129

What is your position?

IS director	12
IS manager	11
Project manager	18
Applications development manager	26
Other	62

How long have you been involved with full life cycle CASE?

Five or more years	42
3-4 years	56
1-2 years	25
Less than one year	5
Don't know	1

What is your responsibility for CASE?

Evaluate or recommend vendors	106
Set standards for your organization	105
Determine need	97
Select vendors	96
Establish purchase agreements	57

What hardware platform are you using for your CASE software?

MainFrame	66
Stand-alone PCs	40
Networked PCs	40
Other	8

METHODOLOGY

Products included in this week's Buyers' Scorecard are the market-share leaders among integrated computer-aided software engineering tools.

User names were obtained from nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results.

The response base was 43 users for TI; 38 for KnowledgeWare; 18 for Arthur Andersen; and 30 for CGI Systems.

Ratings from nine Intersolv users follow but were not included in the score because they are less than the 18 minimum number of respondents required:

- Application quality — 8.3
- Programmer productivity — 7.8
- Speed of development — 7.2
- Responsiveness of service — 8.0
- Data repository — 6.0
- Value for the dollar — 7.8
- Ease of use — 7.1
- Quality of support — 7.3
- Planning and design — 8.0
- Integration of life cycles — 6.6
- Code generation — 8.4
- Programming capabilities — 8.0
- Support for LAN — 7.8
- Documentation — 7.1
- Testing — 7.3
- Training time — 6.5

ACKNOWLEDGMENTS

Computerworld thanks David Sharon, CASE Associates, Inc. and the CW Database Division for their assistance in preparing this Buyers' Scorecard.

Asset management

The 'buy, buy, buy' days are over, and it's time to track all that equipment and software. Problem is, inventory systems aren't yet up to snuff.

BY ARIELLE EMMETT

Susan Blobaum

How do hundreds of modems just "disappear"? Short of grand theft, they usually don't — but if you aren't aware of their existence, they might as well not be there, right?

Through high turnover, fast technology changes and general neglect, it is not uncommon for data centers to lose track of their equipment and software — where it is, what it's connected to, what they're paying for it, which version is being used, how many people are licensed to use it and when the lease is up.

"You've got to know what's out there: the data sets, the files, the programs and all the tables that go with the system," says Nancy Wong, manager of computer operations at Pacific Gas & Electric Co. "It would be disastrous to find out you left something behind."

Wouldn't it be nice, then, to have a system that could automatically collect and record information on all your computer assets and store it in one central database; detect and record any changes that are made; graphically represent how everything is linked together; include local-area networks and remote sites in its compilation; and alert you to problems and changes that occur in daily operations?

The asset management software that exists (also called inventory management software) can do some of that.

Packages such as **Computer Associates International, Inc.**'s CA-Netman, **IBM**'s Information/Management, **Peregrine Systems, Inc.**'s Peregrine Network Management System and **Legent Corp.**'s IS Inventory and Asset Manager, among others, have expanded into areas outside of basic asset management, into the realms of problem tracking and resolution and change and configuration management.

But there are some glaring weaknesses. Chief among these are a lack of automation and no seamless way to collect information on equipment distributed throughout the enterprise. These mainframe-based packages are also on the expensive side, in terms of both price and maintenance, and the payback is not easily quantified. You can get personal computer- or LAN-based versions rather than mainframe-based versions, but you have to be careful not to lose something in functionality.

Some observers doubt that these products will ever be as helpful as users need them to be. In fact, some don't believe the data center products are necessary and advise that you go right for the ones that track what's on the LAN. However, vendors say they're working to add the needed functionality. Whether you build your own system or work with one of the available systems, one thing is sure: A well-run data center is one that knows its assets and measures so it may better manage. •

Emmett is a free-lance writer based in Wallingford, Pa.

INSIDE

- *Other features: Help desk, change management.*
- *Weaknesses: Automation, LAN integration.*
- *Popularity poll.*
- *How LAN links may be forged.*
- *One user's frustrations.*
- *Product listings: Inventory and change/configuration management systems.*

Cost

- A few thousand dollars for PC-based systems.
- $30,000-plus for mainframe packages.
- Large hidden costs, including installation, customization, ongoing maintenance and training.
- Hard-number paybacks unavailable.

Benefit

- Top performing data center clients at Herndon, Va., consultancy Compass America, Inc. (which overwhelmingly have inventory software installed) have 20% to 60% lower costs over Compass' average data center clients.
- Combined with efficient problem tracking, "it enables managers to make decisions based on hard numbers," says Peter Balbus, director of strategic planning at Compass.
- Soft benefits include the ability to control costs, track and manage changes, rejuvenate underused assets and forge a closer link among distributed computers, users and information systems.

Weaknesses

There are at least three as-yet-unresolved issues in the inventory software game, according to observers and vendors of these systems.

1. **The ability to automate data collection.** No package automatically records information; systems administrators must manually input, update and maintain all data.

2. **The ability to transparently update the database when changes occur.** Again, no system can automatically record changes, although there is some degree of automated linkage with other programs. For instance, **Computer Associates International, Inc.**'s CA-Netman and **IBM**'s Info/Man, among other products, can accept problems logged in from certain other network and resource management systems.

   If certain conditions are detected on the network, a problem database will automatically open at the help desk level. This feature allows the help desk to have central control over everything going on in the data center.

3. **The ability to integrate the database into other activities being performed, such as software distribution.** In the last two years, distributed issues have become increasingly relevant. "There's a feeling of 'I need to get control, to know where my spending is,' " says Phil Carrai, a product manager at Legent. Currently, there are no on-line, real-time links between LAN servers and mainframe inventory management programs.

   Aside from some rudimentary batch file data-dumping capabilities, mainframe inventory products do not routinely scan or share processor chores between themselves and LAN-based PC inventory products. Systems administrators have to write customized exits to other packages to centralize information in one database.

   "We can upload consolidated reporting information to the mainframe [from a LAN], but it's not done in on-line, real-time mode," says John Staudenraus, CA-Netman product champion.

More than inventory

Asset management packages do more than just collect information on hardware and software and store it in a database. The following features are increasingly being incorporated into these systems:

- **Contract administration,** including linking parts and serial numbers with financial information on equipment leases, expiration dates, depreciation, etc.
- **Help desk features,** such as tracking equipment problems and logging them in a centralized problem resolution database.
- **The ability to monitor equipment availability** and downtime and broadcast messages and alarms.
- **Change management,** which tracks changes in software and hardware.
- **Configuration management,** which allows users to build conceptual and sometimes schematic views of how their equipment and network elements connect. Also includes the ability to track software and hardware configurations and changes right within a host and can include the ability to manage PCs and terminals on remote networks.

Popularity poll

It's anyone's guess how popular these packages are. Peter Balbus, a consultant at Compass America, Inc., a Herndon, Va., firm that does metric analyses of data center costs and efficiencies, estimates that a quarter to one-third of all Fortune 500 companies now have asset management software and that European companies are way ahead of the U.S. in recognizing its value.

"The numbers are constantly growing, and the questions we're getting about them are constantly increasing," says Arnold Farber, president of Farber/LaChance, Inc., a Richmond, Va., data center automation consulting firm.

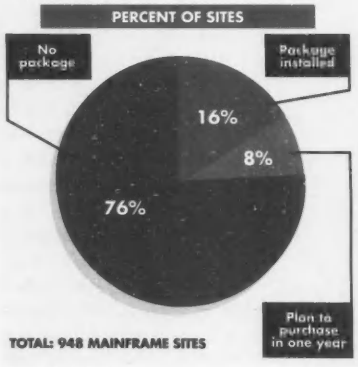
Other studies indicate a somewhat lower concentration (see chart at right).

Thomas Nolle, president of CIMI Corp., a computer consulting firm, agrees with the lower figure. "Our numbers show that less than 20% have it, and less than 15% of the data centers ought to," he says. That's because of these systems' weakness on the LAN.

"Ninety-three percent of the MIPS are out on somebody's desktop," he says. "If you're not going to inventory that, why inventory at all?"

Taking stock

Very few data centers have inventory management software installed



Source: Xephon/WPWS

Linking up for more functionality

The biggest complaints about these packages include their inability to collect information on distributed computing platforms and their lack of automation.

Vendors are moving in various directions to add this sort of functionality:

▶**Batch input.** Some products allow files from PC-based inventory packages to be "dumped" into their database in batch mode. **Computer Associates International, Inc.**'s CA-Netman, for example, allows consolidated PC files to be uploaded to the mainframe database.

"PCs doing administration of a couple hundred pieces of equipment, such as an end-user configuration, may want to shoot a consolidated report up to the mainframe," says John Staudenraus, CA-Netman product manager.

Thomas Nolle, president of CIMI Corp., says a distributed mainframe to micro link requires a terminate-and-stay-resident program on the PC that the inventory program is managing.

There is a negative to this: A program would remain active within the PC while the user is conducting other work. This, unfortunately, consumes valuable system resources.

▶**EDI link.** Philip Carrai, a product manager at Legent Corp., says electronic data interchange (EDI) may finally solve the problem of populating an inventory database by dumping product, order and contract records directly into a data center asset management system. Ideally, the electronic link would be seamless, and information would be dumped simultaneously along with a purchase order.

Legent does not yet have an EDI hook, but "that's the direction you need to take," Carrai says.

"There is really no standard way of categorizing or updating databases, although a lot of work is being done in this area, especially to create links between inventory and EDI ordering systems," Carrai notes.

▶**Scanning programs.** Ultimately, asset management software writers need to develop scanning programs enabling the system to pick up data in different remote environments.

CA, for example, recently purchased Scancom PC Management, a PC querying capability from **Scancom Ltd.** in the UK that will "ultimately allow us to electronically query the hardware and software in a user's configuration," Staudenraus says. CA has not disclosed a date for releasing this software or the technology into Netman's own product line, however.

Pie in the sky as this may seem, the pressure is increasing to reach such a goal.

"When you look at the total dollars in a distributed enterprise, they tend to be significant," Carrai says. "If you can control and manage these expenditures, the payback can be significant."

ARIELLE EMMETT

In real life: A user's frustration with inventory

BY ARIELLE EMMETT

As a vice president at J. P. Morgan Services, Inc. in Newark, Del., Ralph Solomito and his global network control group have the heart-pounding task of supporting $600 billion to $800 billion in electronic transfers each day.

Solomito's job is to keep constant surveillance of a global corporate network, which includes multivendor local-area networks and wide-area networks, two corporate data centers, diverse large-system hardware plus more than 19,500 IBM terminal sessions and multipoint connections to Europe, South America, the Far East and Canada.

> "IF THESE networks are not available . . . we're talking about serious consequences. That's why it's key to have an effective problem and change management system."
>
> RALPH SOLOMITO
> J. P. MORGAN SERVICES

Solomito says his job is made a bit less hair-raising by Morgan's consolidation efforts (the corporation has reduced 11 technical centers to two since 1984), plus an enterprise effort to centralize problem, change and inventory management. "If these networks are not available or the connectivity isn't there, we're talking about serious consequences," he says. "That's why it's key to have an effective problem and change management system."

So far, the company has had to work hard to get such a system, and Solomito is still dissatisfied. Morgan's problem and change tracking system was primarily built in-house, although a customized version of IBM's Information/Management plays a role as a repository for change and trouble-ticket information.

"I'm very disappointed in Info/Man," Solomito says. "If the product would provide the flexibility and the reporting capabilities that I believe a true enterprise management system should have, then the amount of work we've had to do over problem and change would not have been necessary."

The database is rigid, he says, so it is used as a storage system for network events and changes, even though the product does have a configuration capability. "It can't produce a user-friendly report," he says. The staff has also written exits and front ends to its 14 other element management databases to handle its strategic view of one central facility to monitor Morgan's global technology interests.

At present, Solomito says, Info/Man "neither allows us to accept distributed processes into a central facility nor does it interface easily or effectively with other automation products."

To integrate network and system messages and alarms, Morgan purchased Multivendor Automated Expert Manager (MAXM), a RISC System/6000-based product from **International Telemanagement Corp.**, which collects problem "event" information as well as system messages on the network from IBM's NetView.

The data is sent automatically from MAXM to Info/Man, where trouble tickets are opened up. Similarly, Info/Man records changes to the network based on requests made through the Morgan network help desk.

Solomito says he is working with IBM to address needed changes. Dennis Jones, a marketing support representative for IBM's Info/Man, says the package will undergo modifications that will make it compliant with SystemView, complete with pull-down menus and a Windows interface. •

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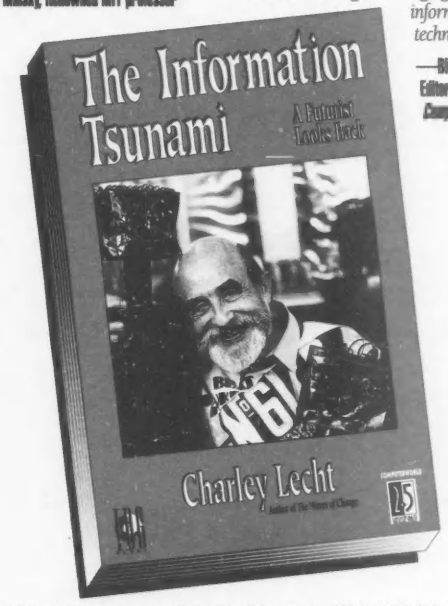

A Futurist Looks Back

Charley Lecht, noted futurist and *Computerworld* columnist, presents his view of the turbulent 1980s, a time when change fell on the computer industry like a tidal wave. Lecht's book of essays addresses the "four horsemen of cybernetics" — the technical, political, psychological and financial powers that drive the computer industry. Sometimes serious and other times uproariously funny, these essays cover many topics — artificial intelligence, robotics, holography, integrated chip manufacturing, programming, legal issues, and the rise of Japan as a computer super-power — in a highly readable style that offers not only a look back, but a futurist's forecast of things to come.

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Taking inventory

Popular mainframe systems

	OPERATING SYSTEM	GENERAL DESCRIPTION	DATABASE	NETWORKS	INSTALLED BASE	PRICE
Atlanta On-Line Systems, Inc. (404) 955-3376 Data Processing Inventory System	MVS, VSE, OS/2	Mainframe- or PC-based. Asset, configuration, operations and problem management for hardware. Software version control and network configuration management	Nonrelational	LAN Manager, SNA	175	$6,995 (VSE), $7,995 (MVS)
Computer Associates International, Inc. (516) 342-6000 CA-Netman/Mainframe	MVS, VM, VSE	Asset, configuration, problem and change management; hardware, software and network problem tracking	VSAM or Datacom/DB	SNA	1,200	$20,000-$100,000
Legent Corp. (703) 734-9494 IS Inventory and Assets Manager	MVS	Asset, configuration and problem management; software version control, hardware location and capacity; software configuration, licensing and problem management; network configuration and problem management	Nonrelational	SNA	70	$21,800-$59,600, depending on license type and CPU size
MacKinney Systems (417) 882-8012 DP Manager	VSE, MVS, DOS, OS/2	Help desk/inventory management system. Asset, configuration, change and problem management; Software configurations, software distribution, licensing and problem management. Network configuration and problem management	VSAM	Any NetBIOS-compatible LAN	300+	$3,000 (MVS), $1,995 (VSE), $995 (single-user PC), $1,995 (LAN)
Software Engineering of America (516) 338-7000 Keys	MVS/XA/ESA, VSE	Problem/change management system. Asset, configuration, change and problem management for hardware, software and networks. Version control for software, software distribution and licensing	VSAM	NP	52	$12,500-$35,000
Peregrine Systems, Inc. (619) 431-2400 PNMS		Asset, configuration, change and problem management. Software configuration, licensing, version control and problem management. Network configuration and problem management.	Relational, DB2	Novell, TCP/IP, SNA, NetBIOS-compatible LANs	300	$39,000 starting price

For information about IBM's Information/Manager, please contact your local IBM representative.

What's important

Users rated their inventory packages on a scale of 1 (poor) to 5 (excellent) using 12 criteria

Source: Xephon/WPWS

MAINFRAME
PROS:

- **More robust programs.**
- **Connectivity to other network and change management products.**
- **An emphasis on enterprisewide management.**

MAINFRAME
CONS:

- **Requires customization to interface to user's operating environments.**
- **Not oriented toward tracking myriad small PC components.**

◄ LEADING PLAYERS

Here's how the leading vendors differentiate their products:

Computer Associates International, Inc.'s CA-Netman: Fast response time, broad functionality in problem/change, inventory/financial and configuration management, according to CA.

Integration among these function areas is tight, according to John Staudenraus, CA-Netman product champion, so that problems, inventory and changes to hardware and software are all logged and tracked against each other for use by a central help desk.

The product features an automated link between problem, change and inventory management, including automatic opening of a problem ticket into the inventory database when the mainframe detects an error. Some programming required to interface into user's operating environment and also to load in raw data.

IBM's Information/Management: Known for its versatility, problem and change tracking and rich feature set. However, the system is also notorious for the amount of system administration it requires, in terms of both updating data and writing custom interfaces to other systems.

Legent Corp.'s IS Inventory and Asset Manager: Concentrates only on asset and financial management, including forecasting, which is a principal strength, according to Phil Carrai, director of product management. The package does not have a native problem and change tracking system, but it can interface with IBM's Info/Man to provide that functionality.

Peregrine Systems, Inc.'s PNMS: Especially strong in equipment and network availability tracking, says Bebe Brown, product author at Peregrine. Also offers support for a broad range of hardware platforms as well as customization, including an applications generator and source code, which are available to help customers tailor their own interfaces. PNMS is also unusual in that it offers its own relational database, although support for DB2 is available. In the war of network management standards, Peregrine's Len D'Amico says, "We are prepared to support HP's OpenView or IBM's NetView."

ARIELLE EMMETT

PERSONAL COMPUTER

CONS:

- **Most do not interface with other mainframe change and problem management software.**
- **Less sophisticated change management.**

PERSONAL COMPUTER

PROS:

- **Better asset tracking of micro components.**
- **Less expensive, in terms of price and maintenance.**
- **Shorter learning curve.**

Leading PC systems

- **Bendata Management Systems, Inc.**
  (719) 531-5007
  Heat
  Price: $2,995
- **Computer Associates International, Inc.**
  (516) 342-6000
  CA-Netman/PC
  Price: Not provided
- **ConsulNet Computing, Inc.**
  (416) 441-0363
  PC Administrator - Inventory
  Price: $599 - $1,699
- **Corporate Software, Inc.**
  (617) 828-7727, ext. 1247
  Quetzal Software
  Price: $8,000 - $12,000
- **Magic Solutions, Inc.**
  (201) 529-5533
  Support Magic
  Price: $3,995 (single-user)
- **Trident Systems, Inc.**
  (415) 332-0188
  InfoTrak
  Price: $1,295 - $9,995, depending on numbers of users
- **Vycor Corp.**
  (301) 220-4450
  DP Umbrella
  Price: $1,995 (single-user), $3,995 (five users)

(See mainframe chart for other systems that run on the PC)

FOR YOUR INFORMATION

For a comprehensive listing of LAN inventory packages, see the Jan. 27, 1992, issue of Product Spotlight. For a listing of help desk-oriented inventory management products with call-logging and call-tracking features, see the June 1, 1992, Product Spotlight.

▲ TAKE HEED ON PCs

Makers of PC inventory packages are attempting to take more of an "enterprise-wide" view in their products. You still have to be careful about getting true data center functionality when going the PC route, however. While some truly cover large-system issues, others are better used for LAN inventory only.

Weaknesses show up particularly in the financial and configuration management areas. For instance, be sure that the system can handle complex leasing and rental arrangements that are necessary in the mainframe and midrange worlds.

PC-oriented packages can't always depict a host-centric view of your system — not good when you need it to build a schematic view of your system configurations.

Field sizes can pose another problem; some people complain that they can't even fit the price of their large and midrange systems into the fields provided by some of the PC packages.

There are some systems that are strong in their data center orientation. PHH, a $4 billion financial services company, found **Trident Systems, Inc.'s** InfoTrak to be particularly strong for the enterprise. The company made the purchase because it wasn't getting much use out of its **CA** CA-Netman system, says Alvin Wilson, PHH's director of quality assurance. "A decision was made simply to find something easier to use than Netman," he says.

InfoTrak was also selected because it "allowed a whole lot of people across different platforms to access information through a LAN," says Bill Fleishman, a consultant at Baltimore Systems Group Ltd., which recommended the product.

Software change management

	OPERATING SYSTEM	GENERAL DESCRIPTION	DATABASE	NETWORKS	INSTALLED BASE	PRICE
Legent Corp. (703) 734-9494 Endever	MVS, DOS, OS/2, MS-DOS	Configuration, change and problem management. Software version control, software configuration and problem management	Nonrelational	Novell, Vines, LAN Manager, DECnet, AT&T Stargroup	5,400 (workstation), 850 (mainframe)	$5,000-$100,000 (workstation); $27,000-$150,000 (mainframe)
Optima Software, Inc. (916) 646-3800 Change Man	MVS XA, ESA, MS-DOS, OS/2	Change and configuration management, operations management, version control. Tracks software distribution and problems. Automatically sends updates to change management system (IBM's Info/Man)	Relational, DB2	Novell, Vines, LAN Manager, DECnet, SNA	100+	$40,000 (starting price - mainframe); $10,000 (starting price - network)
Softool Corp. (805) 683-5777 CCC/Manager	MVS, VM, VMS, Unix, OS/2 2.0, DOS/Windows 3.0	Change and configuration management, distribution, and problem management, software version control	Proprietary	Novell, Vines, LAN Manager, TCP/IP, DECnet	2,500+	$595 (PC stand-alone); $39,000 (starting price - mainframe); $30,000 (starting price - midrange)
Software Maintenance and Development Systems, Inc. 508-369-7398 Aide-De-Camp	Unix, VMS	Configuration management, stores and organizes information for the data center such as distribution, operations and change management. Also tracks purchasing and maintenance costs and software version control	Proprietary, object-oriented	Novell, Vines, LAN Manager, TCP/IP, DECnet, SNA	NA	$1,000-$3500, depending on number of users

◄ CLOSE KIN

Some close relatives of asset management software are "software change management" systems. These tools help you control things such as installing a new version of a spreadsheet throughout the corporation, controlling software licensing and tracking software changes.

A leading mainframe-based tool is **Legent Corp.'s** Endevor, which accounted for one-fifth of the software change management licenses at 244 sites in a recent study by Xephon/WPWS, a London-based market research firm. **IBM's** Information/Management accounted for 14% of the licenses. Also popular was **Computer Associates International, Inc.'s** CA-Librarian Change Control Facility.

A leading PC-based tool is **Softool Corp.'s** Change Configuration and Control/Manager, which provides asset management, version management and change management. The latter helps track software migrations and turnovers throughout an organization.

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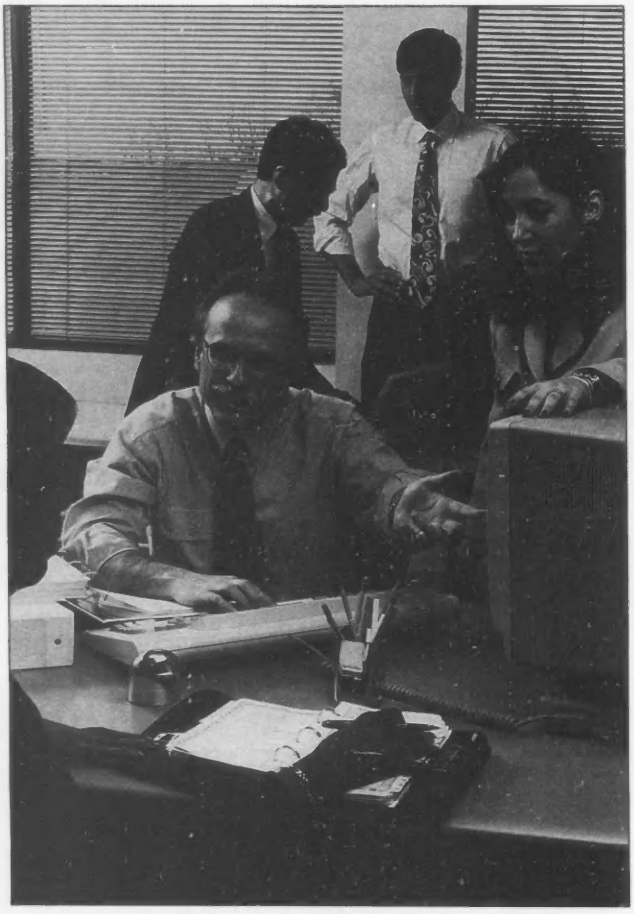

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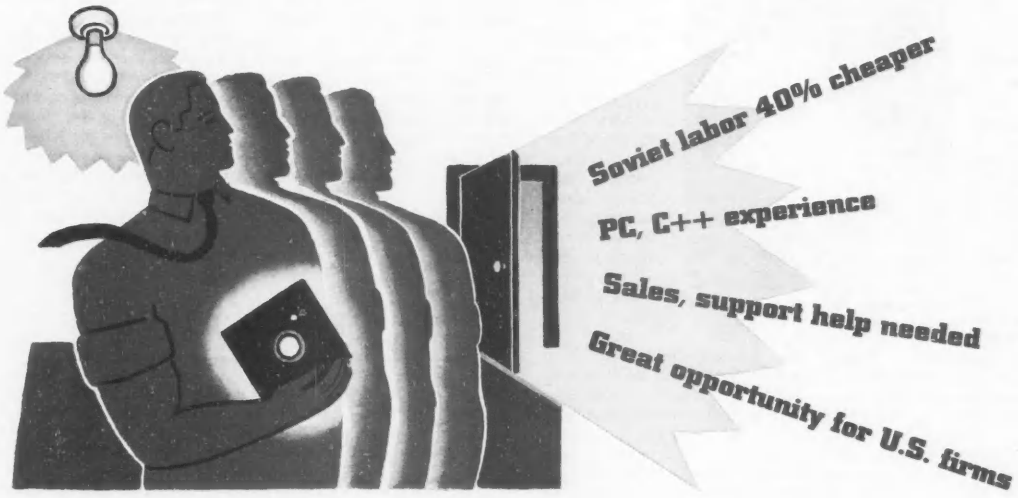

James Steinberg

BY JOHN S. MORRISON

In my mind, the mammoth building at 80 Leningradsky Prospect that houses Almaz Scientific Industrial Corp. symbolizes the painful transition now occurring within the former Soviet Union.

We walk past the cypher-lock identification system, past the guard booths and into a darkened building where staff members once conducted highly classified research and engineering work related to the Soviet version of the Strategic Defense Initiative program. We stumble through empty, pitch-black hallways, where only an occasional window provides visibility. Our guide, Alexander Birger, chief of the department in the computer-aided design area, seems like Orpheus leading us through the netherworld.

"Only two months ago, your visit here would not have been possible," he says.

Finally, we reach a small, lighted room. A handful of software engineers greet us and begin to demonstrate original software tools they hope to commercialize. The large, state-owned facility is serving as an incubator for this 15-man enterprise — an enterprise that represents a single point of light in an otherwise darkened institution.

The ensuing demonstration of object-oriented simulation and test tools for personal computer board design is punctuated by moments of entrepreneurial angst.

"Our group has not been paid in two months," Birger says. "Soon it will be more profitable to sell cigarettes in Gorky Park than to develop new technology in Russia."

"What will it take to keep this engineering team alive?" I ask.

Birger thinks for a moment, then calculates an individual's salary, converting rubles to dollars. "Two hundred dollars a month."

As Russia and other members of the Commonwealth of Independent States (CIS) struggle to reshape their laws and institutions, capitalism and entrepreneurship are starting to take hold. One of the most promising footholds is software production, as I discovered when I visited Moscow in early June.

With the disintegration of the Soviet Union in 1988, state institutions formerly dedicated to defense or heavy industry now serve as incubators for emerging commercial software entities.

The opportunity for U.S. companies is great. They can work together with CIS companies in the field of software production, offering their expertise in areas in which CIS companies have been experience-poor — advertising, sales, billing, shipping, customer support and so on — while gaining access to software manpower that is typically a factor of 100 cheaper than in the U.S.

However, low cost does not mean low talent. CIS engineers and programmers have varied skills, mostly geared to the DOS environment (see story page 92), although there are production facilities experienced in Digital Equipment Corp. and Burroughs Corp. (now Unisys Corp.) environments. Work is mainly done on multiple networked PCs, a situation that emerged because of the dearth of state-of-the-art processors. The lack of such processors has also driven development of efficient computing algorithms.

Here's how specific CIS developer expertise shakes out:

• **Programming languages.** A surprising number of software development efforts within the CIS are using object-oriented programming and object-oriented design to build production software systems. A study by Technology Transfer International, Inc. of 40 sites in the CIS revealed that 72.5% used C++, second only to C language use, which was occurring in 80% of the sites. The 40 sites broke down to 18 in Moscow, nine in Tallinn, seven in St. Petersburg and six in Kiev. These sites were selected

Continued on page 90

Morrison is president and founder of Technology Transfer International, Inc. in Colorado Springs. He is currently working with Ed Yourdon of *American Programmer* and Lev Weinberg, Boris Yeltsin's enterprise adviser, on a project titled "Software Production in the CIS — Low-Cost Sources of Engineering Talent in the Soviet Union." For information on how U.S. companies can participate in the study, contact Morrison at (719) 260-0925.

Yeltsin adviser wants programming partners

Weinberg's plan includes Soviet contract labor, packaged software support, direct dealerships

When Lev Weinberg was developing software associated with engine testing and ground-based equipment, he didn't imagine he'd one day be Boris Yeltsin's enterprise adviser, helping to shape reform directions and defending the idea of giving priority to high technology.

But his background, which includes experience with joint ventures and international economics, made him a logical choice.

Weinberg was director general at a first-of-its-kind joint venture with a French company and an Italian company called Interquadro. Interquadro was a computer services company that tested local-area networks, developed customer-specific process control applications and created custom applications. It had several dozen programmers, a bunch of Motorola, Inc. 68000 and PC-compatible machines and LANs with Western-manufactured adapter cards and Novell, Inc. software.

During his time at Interquadro and after he left the organization late last fall, he was president of an association consisting of joint venture directors.

Weinberg: *Russian labor is 30% to 40% cheaper*

Besides his work with Yeltsin, Weinberg is chairman of Investment Programs, Inc. and a personal consultant to IBM Moscow. He has coordinated the activities of 15 firms in the systems and software business that develop projects based on IBM equipment.

Alex Giglavyi, a friend of Weinberg's, acted as an interpreter during Weinberg's discussion about one of his newest ventures in the CIS — oversight of a "software trading house," an entity oriented toward contract software development services and marketing, sales and support of CIS and foreign software products.

About a year ago, I set up a software [trading] house, what I'd call a software supermarket or distribution center with over-the-counter sales.

The first major objective of the software trading house is to find the partners who will contract local programmers for large portability projects. My first proposal came from General Motors Corp. One of the departments in General Motors required a huge migration effort. They asked me to help find a team of capable programmers. This is the kind of job for which Russian programmers are well-equipped. The labor cost savings they could realize using the Russian workers may be 30% to 40%.

It's really tough to persuade a decision maker in the States about cost savings using an outside labor force. A common view is that a company in Russia is not reliable enough. My thought was to set up an intermediary company in Switzerland that could take this bridging responsibility. No one cares from which countries my Swiss partners hire the workers for their systems.

I prefer to work with large system development efforts on a contractual basis. Any Western partner may use the pool of programmers, many in the defense industry, who have experience integrating large systems.

My second major objective is to support ready-made [packaged] software. Here, I emphasize products that have a large, knowledge-intensive component. [Because certain software in the CIS is built by people who have high levels of very specific scientific and mathematics knowledge, it must be used by people who have similar expertise. For example, software for PC board design requires that the user have some specific engineering expertise. — Ed.]

The third major objective is to offer direct dealerships [services]. We have one such relationship with Borland International, Inc. We offer services making necessary revisions and adaptations for local conditions; such adaptations may include translation into the Russian language.

The fourth and final objective is to set up a kind of "slavery" market. We want to find jobs for programmers who would otherwise leave the country to work abroad. We give them a percentage for consultation services.

The task of this software trading house is to put these four objectives together.

IBM's search for top coders

About a year ago, Weinberg handled a special project for IBM — pinpointing the Top 50 "most able, professional" Soviet programmers. He compiled his list, then asked Soviet colleagues who were working in the U.S. to put together a similar list of capable programmers that remained in the CIS. There was a 70% correlation between the lists.

Concentrating on the Top 10 people, he investigated the scale of system each was capable of managing. He used a formal modeling approach, designing a model of a large data processing site at a bank. He wanted to figure out whether each person on the list was capable of retaining the conceptual model of the entire enterprise in his mind.

In the end, Weinberg zeroed in on seven programmers with the potential to be system architects on IBM's large-scale software projects.

Continued from page 89

because they had the ability to construct large software systems (100,000+ lines of code), had a project metrics collection and used modern software engineering languages.

Other languages in use at the sites included assembly language code (55%), Pascal (42.5%) and Fortran (12.5%). Lisp and SQL were each used at 7.5% of the sites.

• **Applications.** The most popular application in the study was simulation (70%), followed by graphics (65%), databases (60%), communications (32.5%), expert systems (30%), computer-aided design (27.5%) and computer-aided software engineering (27.5%).

In general, the broad emphasis on mathematics and hard science in the former Soviet Union has resulted in theory-rich software that encapsulates and integrates concepts from diverse intellectual fields. Many of the software developers are physicists, geologists and mathematicians first and software engineers second.

The primary emphasis is on developing decision and control systems, as evidenced by the types of software spin-offs commonly found in the CIS. Most concentrate on artificial intelligence, control theory, simulation or training.

Entrepreneurs in the CIS, such as Lev Weinberg, chairman of Investment Programs, Inc. (see story above), are attempting to unite loose networks of talented engineers and make these talents available to foreign companies on a contract basis.

In the meantime, CIS programmers have not been idle. While in Moscow I had the opportunity to look at the following Russian software projects firsthand. What I saw modified many of my preconceived ideas about the quality and technical capability of Russian software engineers:

▶**PC board design software.** A group at Almaz Scientific led by Birger has developed board design software called Sympatia. The system is used for simulation, test generation and test analysis of digital devices as well as large-scale integration and very large-scale integration (VLSI) components. It is conceptually similar to the LM-500 Universal Hardware Modeler produced by Logic Modeling in Milpitas, Calif.

In coming up with a product, Birger says, his group read product literature from a variety of Western companies and identified problem areas with board design software — namely, that these products were deficient in coupling design capabilities with test capabilities. This is the area the team targeted for improvement with Sympatia. The system is implemented on an IBM PC AT using object-oriented design and the C++ language. The design objects are PC boards, matrix VLSI chips and other digital units.

▶**Expert systems development and power plant control software.** Intelligent Information Technologies Ltd. has married research into AI with control system theory in producing its power plant control software. The company integrates simulation, AI and human decision-support systems in an expert systems shell, real-time control system and plant process simulator.

The Expert System Development

Continued on page 92

The origins of private firms

1988 was the watershed year for software entities in the Soviet Union because prior to that time, private companies were illegal. Even so, software development was alive and well and taking place within state institutions and monopolies.

Today's "private" CIS software companies had their roots in the phenomenon of "piggyback" teams, according to Cyril E. Volkavitsky, deputy chief editor of *Man and Computer Newspaper*. Piggyback teams were groups of developers that used a state institution's resources (office space and equipment) to do their small-scale software work in narrowly focused areas such as inference engines, simulation models of laser systems, numerical methods and PC board design. However, these teams would remain distinct business entities, not necessarily always sharing their knowledge with the institution.

Nor did the state institution's managers have the market savvy to exploit the work these groups did that was related to the company's business objectives, Volkavitsky says.

"The potential commercial value of these piggyback products may actually outweigh the yearly production of other products in a particular state-owned company," he says. "However, the bosses are never witty enough to figure out which geese bring golden eggs and which bring ordinary ones."

The survival of these private firms may depend on their gaining knowledge, most likely from foreign partners, in advertising, sales, support and other operational functions.

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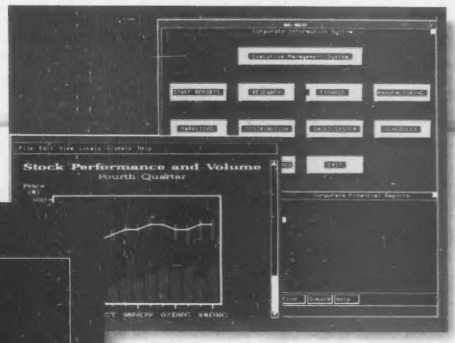

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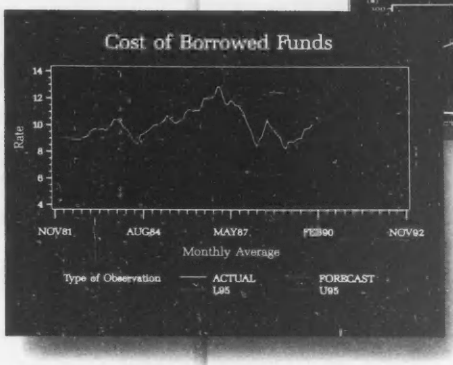

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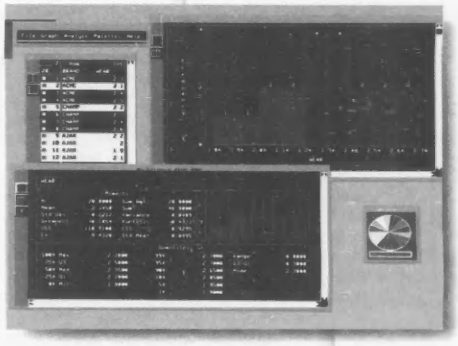

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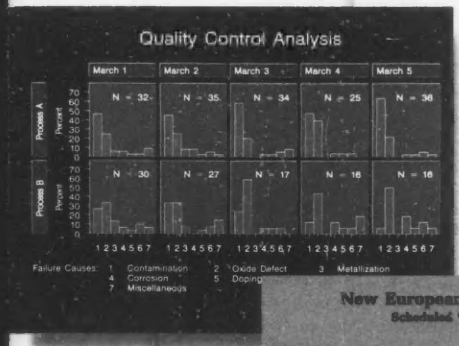

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Piracy problems behind former Iron Curtain

Software entrepreneur says more affordable software, improved support would alleviate situation

I stayed with Jury Mordovskoy's family in their apartment during my week-long visit to Moscow. Mordovskoy is a former Soviet Army major turned software entrepreneur. His company, Sigma Technologies, has put together a network of people across the CIS to find technology of interest to Western firms for sale or license. Software is Sigma's forte because it encapsulates algorithms and scientific expertise — "brainware" plentiful in the former Soviet Union.

Mordovskoy has spent a lot of time evaluating the emerging PC software market within the CIS, a market characterized by high prices and piracy of Western software.

Such piracy, while not to be condoned, does have an "upside" — CIS developers (and potential U.S. contract laborers) have been able to familiarize themselves with Western programs. Studying what gives these programs value in the market helps CIS developers fashion their skills and programs accordingly.

.....

Some 21% of the software within the Russian market is paid for in rubles, while 11% is paid for in hard currency. The remaining 68% is pirated. High prices, the unavailability of legitimate copies and the absence of maintenance services probably account for most of this pirating.

The ruble prices of many software products are very high in Russia. In the U.S., for example, the cost of workstation software is typically not greater than the workstation user's salary for one month. In Russia, the price of workstation software is three to 10 times the salary of the highest paid software professionals.

In those cases in which legitimate copies of packaged software are available at affordable prices with maintenance support, pirating has diminished significantly.

For example, a joint venture called Magnit is distributing [and supporting] Nantucket Corp.'s Clipper database system. According to Magnit's data, there are more than 10,000 illegal users of Clipper Version 5.01 in our country. Companies that sell products without a manufacturer's license charge between 50 and 4,500 rubles for pirated copies (between 50 cents and $45). Despite the fact that almost everyone who would like to have a copy of Clipper has a pirated version, sales of legitimate copies are increasing.

Strolling in *downtown Moscow (left to right): Larissa Mordovskoy, Jury Mordovskoy and John S. Morrison*

The moral of the story is that the best way to make users honest is to support them with high-quality service.

The trade in intellectual property is a very delicate and complex matter. Our country is somewhat inexperienced in "productizing" software. However, we are rich in "brainware." Foreign firms such as IBM have shown strong interest in our algorithms. But then, there is no copyright protection for algorithms. So we have only one solution — encapsulate our algorithms in software.

We certainly know how to write programs, but we need to do a better job at marketing and supporting them abroad. We have robust academic traditions in compiler design but very little experience with database management systems.

This last lamentable fact partially explains Russia's low share of the world software market (less than 1%), even though the number of programmers in Russia and the U.S. is about the same (about 300,000).

[Footnote: Russia recently passed copyright legislation that will protect the intellectual property rights of software developers. However, while it makes pirating illegal, it will not put sanctions against pirating into effect until 1994.]

JOHN S. MORRISON

Micros back in (former) USSR

Mordovskoy says Russia had no computer market before 1988 because of the realities of a Soviet planned economy and its absence of private companies. Any computers produced — typically similar to IBM 360s and Digital Equipment Corp. minis — were for scientific, research and development and industrial needs. Centralized ministries decided which hardware to install at which location, and customers were tied to specific manufacturers.

While the stock of mainframes and minis hasn't changed much, microcomputers have been the main growth area in computing power, with the number of micros nearly doubling to 1.5 million units from 1990 to 1991. The impact has been that CIS software and programming have been dominated by micro-based applications.

Here's how the PC industry shakes out, according to Mordovskoy's research:

- **Hardware.** CIS has less than 2% of the total world number of micros. These units are mainly IBM PC clones, with local industry producing machines in the IBM PC XT class. PCs with Intel Corp.-based 80286 and 80386 processors are assembled in limited quantities.

There is a near total absence of Apple Computer, Inc. Macintosh computers and their analogs.

- **Manufacturing.** Thirty-eight percent of microcomputers in Russia were manufactured in Asia, 33% in Western Europe or the U.S. and 29% in Eastern Europe.
- **PC operating environments.** DOS is the leading software operating environment (73%), followed by Microsoft Corp.'s Windows (18%), Unix (8%) and the Macintosh environment (3%).
- **PC software.** The most widely used software types are programming languages (30%), text processors (25%), databases (20%) and spreadsheets (15%).

Electronic mail is poorly developed and is mostly found in bulletin board systems. The two computer service networks that enjoy the greatest use are Fido, which has about 2,000 users, and Relcom, which has access to Internet via gateways in Finland and Germany.

Continued from page 90

Tool (ESDT) is an object-oriented environment for creating decision-support systems, dynamic object simulations, technical diagnostic systems, intelligent computer-assisted instruction systems and intelligent databases.

User interface features include menus, hot keys, on-line Help and a library of reusable modules. It works on an IBM PC.

I viewed a product developed using ESDT — a control system for a power plant, called Operator. The system executed on multiple networked PCs and had an object-oriented, graphical interface. Potential applications of Operator include plant process monitoring systems and self-training operator simulators.

▶**Health diagnostic system.** The Monada system is the biometric equivalent of computer diagnostics used in automobiles. The patient holds a reference electrode while the diagnostician probes electric field intensities at the body's acupuncture points.

The software associated with this system is highly graphical and runs on an IBM PC. It displays the acupuncture pathways and points as an overlay on the outline of the human body. As the diagnostician measures the acupuncture points, the software develops a picture of the patient's health, using pictorial graphics and sound to cue the diagnostician.

The system also sets up a database for each patient and provides a dialog-based tutorial for diagnosticians in training.

On the packaged software front, the following offerings reveal the technical sophistication and scientific orientation of many software production facilities:

- **Interprognoz-AT.** This package uses the ideas of the mathematical chaos theory and target forecasting to predict the location of gold and diamond deposits, oil and gas fields and underground water. It takes as its input aerial imagery and geological survey data.
- **OptoCAD.** This application package simulates and assists in the design of laser systems used in science, industry and medicine. It has a modular architecture, with each module describing a mathematical model of a laser-associated element. It has a graphical user interface.
- **KID.** The Association of Computer and Childhood, or KID, markets educational software. Software in the form of games not only teaches children but also evaluates their mental capabilities, diagnoses problems and identifies learning impediments. KID hardware consists of an IBM PC AT or Personal System/2 for teachers and up to eight machines for children (IBM PC XTs networked to the teacher's workstation).

Like Germany or Japan after World War II, investment in the CIS not only holds the promise of great reward but also carries clear risks. The survival of many CIS companies is tenuous, given the floundering economy and the lure of foreign job markets. While many companies are capable of producing innovative software of high quality, they lack the marketing and operational savvy of their more established foreign counterparts.

Certain CIS entities, such as Sigma Technologies (see story above), which is pinpointing technologies for sale or license to Western companies, are trying to get the word out about CIS software talent. But it may take collaboration with foreign companies that can provide guidance on business infrastructure to solidify CIS' fledgling software market. •

MANAGER'S JOURNAL

THE CEO VIEW

Full steam ahead with re-engineering

Despite internal opposition, PHH chief is molding his business into a global competitor

When PHH Corp. decided to consolidate its multiple data centers into two sites, it met considerable resistance from some subsidiaries used to having their own. But Robert D. Kunisch, chairman, president and chief executive officer, gave a speech now known among employees as the "get on the train or get in front of it" speech.

Gradually, Kunisch is wearing down the resistance in his quest to turn "a collection of businesses" into a globally integrated provider of business services. Based in Hunt Valley, Md., PHH is a $4 billion company that manages vehicle fleets, employee relocation and real estate services for more than 2,000 other businesses around the world.

Kunisch and his top information systems executive, Richard A. Bolandz, want to use information technology to help bridge the gap between the vehicle and real estate sides of the business so both sides can share sales leads and provide one-stop shopping for multinational clients [CW, March 9]. In a recent interview with Mitch Betts, *Computerworld*'s national correspondent, Kunisch described the role of technology in transforming PHH's maturing stable of businesses into more nimble competitors.

■ On re-engineering PHH's business:
Historically, PHH has been a collection of companies. Over and over again, the shareholders were paying for new information systems for each of the operating companies, even though in some cases they were in the same business.

In today's world, we've got to find ways to reduce that duplication of investment. The challenge that we have is pulling the companies together on a global basis and then making sure the shareholders pay for the technology only once. For example, we went out and built a credit-card processing system for fuel managers in Germany with an investment of several million dollars. In reality, that should have been built for fuel management operations in the U.S. and Canada, too.

So beyond removing the technical diversity and consolidating data centers, we're also trying to come up with a common data architecture and a commitment to building the larger global systems *once*. We just can't continue making big investments in individual systems that should really be developed on a global basis.

The challenge we have in management is getting people to work together and seeing the value of that synergy with their sister companies. We deal with issues such as pride of authorship, turf issues and international cultural differences. The people issues are the toughest.

We've had service problems in our various companies because they were so structured, with specialists doing each function. Through business re-engineering, we've formed teams of generalists to serve customers.

Well, generalists do multiple functions, such as appraisal, purchase, calculation of equity, listing and re-sale of the home. Before asking a specialist in one function to handle 10 functions, they've got to be properly supported with data and technology.

■ On using IS for sales and marketing:
We're building an international marketing database so that sales and marketing people in any PHH business or location can network and share leads. A lot of what we do is "relationship selling," since we don't sell a tangible product. The high-level contacts developed by PHH FleetAmerica can be shared to help PHH Homequity get a foothold [at the same company], for example.

The technology can also [serve as] a sales aid by explaining our various services [to the staff]. Pricing of fleet leasing is a very complicated subject, for instance, and a lot of salesmen shy away from it. The first thing we had to do was make the technology as user-friendly as possible.

■ On electronic data interchange with customers:
As any business matures, you have to find ways to do it in a more efficient and effective way in order to improve your profit margins dramatically. One way to do that is to tie our clients electronically into us, to make that choice of leaving us much more difficult.

For example, a customer like IBM wants paperless transactions. They want to be able to specify, order, deliver and monitor a leased vehicle without any paper, including the billing. We're now testing that in the UK.

■ On multimedia applications:
In our business we have tremendous applications for video and computers to assist clients in the decisions they have to make. Why can't we have a client observe a specified fleet vehicle right on the screen?

It's something that excites Rick [Bolandz] and the technology company we formed. At first, we'll apply it to our own business, but later on, I see applications in other markets.

■ On planning and justifying IS investments:
Our business and technology plans are directly aligned. When the business plans are done, they are reviewed by Rick [Bolandz] and his group, who then must build an information technology support plan, including areas where they can find high-impact technology solutions for the business. Then it all gets confirmed by the board of directors. I think there are very few boards that look at information technology plans.

It's hard to quantify the payback of an information system. But I can always demonstrate to the board of directors that our leadership position and success is linked to using technology to support the business plans.

■ On the maturity of the IS function:
It still has a long way to go. We very rarely are on time and on budget in a project. I think IS departments are overly ambitious [when promising completion dates]. They want to perform to such a great degree, and we place such a high demand on them, that they don't want to let us down. So they miss the deadline. I think if they were more realistic on the front end, we'd all be a lot happier.

Robert Smith Jr.

The CEO: *Robert D. Kunisch, 50; graduate of New York University.*

The career: *Vice president of sales at Homequity, Inc., acquired by PHH Corp. in 1971. Rose to the top of PHH's relocation and real estate business. Named corporate president in 1984, CEO in 1988 and chairman of the board in 1989.*

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INSIDE

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▶ Calendar. Page 96.

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Bill Laberis
Editor in Chief, Computerworld
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Dear Bill,

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Editor in Chief, MagazineWeek

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June 10, 1992

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COMPUTERWORLD
The Newspaper of IS

BOOK REVIEW

Examining EDI in outline fashion

Image Processing Systems in Business: A Guide for MIS Professionals and End Users
By Robert J. Thierauf
Quorum Books, New York, $55

Although not a new technology, electronic document imaging has advanced tremendously in the past few years and has at last becoming a viable answer for users seeking to do away with paper.

The resulting ground swell of interest in imaging has also left many interested users groping for some more detailed information.

Regrettably, Robert J. Thierauf's book is not the place to start educating yourself on the subject.

Image Processing Systems in Business often reads less like an informative textbook and more like a details-stuffed seminar outline. (Thierauf is a Professor of information and decision sciences at Xavier University in New Orleans.)

A patient reader will eventually get to most of the key technical and management aspects of imaging, but even so, this 265-book does not cover all of its topics equally.

Particularly disappointing are the handful of paragraphs that are each allotted to the product lines of leading computer systems vendors such as Wang Laboratories, Inc. and IBM.

However, one of the best aspects of Thierauf's book is the great number of descriptions of imaging installations at end-user companies.

These site reports — gleaned from trade press stories — often tell not only how imaging was deployed inside a company but also why imaging was picked to answer a particular problem.

ELLIS BOOKER

BEST BOOKS

IN BRIEF

Glass maker picks IS head

■ As part of a corporate realignment at **Libbey-Owens-Ford Co.** aimed at continuing an increased focus on technological excellence that began five years ago, **Tom Allen** was recently named director of information systems and technology. Allen joined the Toledo, Ohio-based glass manufacturing firm in 1984. He most recently served as director of control systems technology.

■ Colchester, Conn.-based crafts and games manufacturer **S&S Worldwide** has promoted **Tom Kennedy**, its manager of operations, to the post of vice president of operations. Kennedy, who joined S&S in 1988, is responsible for company operations including manufacturing, fulfillment, human resources and IS.

■ **U.S. Trust Co.**, a financial services company based in New York, recently promoted its Computer Services Division data center manager, **Richard Sorrentino**, to the rank of vice president. A 24-year U.S. Trust veteran, Sorrentino heads a center that oversees all online computer systems for the company. Also wearing new vice presidential stripes at U.S. Trust: **Samuel Rosenfeld**, formerly a programming manager at The Bank of New York and currently a project manager in the Systems Development Department of U.S. Trust's Computer Services Division.

■ Office-oriented technologies hyped as paper-banishers — fax machines, electronic mail, cellular phones and overnight delivery, for instance — have not only failed to deliver the paperless office, says Accountemps founder **Robert Half**, but they have saddled office workers with the chore of processing greater heaps of data than ever before. The overload, Half says, has a dicey trickle-up side effect: In a recent independent market research study commissioned by Accountemps, 200 large-firm executives reported some 10.7% of their work weeks were wasted hunting down information that has fallen between the cracks.

When you have news about staff changes or business trends, be sure to drop a note and photo or have your public relations department write to Nell Margolis, senior editor, Management, Computerworld, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Big bucks buy scant tech clout, survey says

BY NELL MARGOLIS
CW STAFF

A whopping $14.1 billion or so poured into technology by the nation's largest banks in the past year is not making technology leaders out of the institutions that footed the bill, according to a report released last week by the trade newspaper *American Banker* and New York-based market research firm Ernst & Young.

The jointly produced Annual Banking Technology Survey showed the respondent banks — 68 biggies accounting for some 28% of the industry's total technology spending — still playing catch-up with smaller, fleeter firms.

Notwithstanding the huge amounts of bank dollars spent in the much-publicized pursuit of technology leadership, their responses revealed a hefty inventory of aging technology: 77% of bank programming done in old Cobol; 84% of the respondent banks' applications lodged on mainframes; and 80% of the mainframe application portfolios at an average age of approximately six years.

"A few banks are investing heavily and managing their technology very well," said Ernst & Young banking partner Diogo Teixeira. "But a large number . . . are so far behind technologically that it may be impossible for them ever to catch up."

Ironically, noted David Shpilberg, Ernst & Young's director of information technology consulting, banks may be held back from joining technology's next generation as a direct result of their pioneer stance in the last.

"Many banks are so committed to older, proprietary technologies that it is hard for them to get different computers to even talk to each other," he said. "Without the basics of a networking infrastructure in place, it is impossible to move on to more sophisticated applications like distributed computing."

Or, perhaps, like computer-aided software engineering (CASE): Despite wide bank acclaim for the technology's importance, the survey showed a paltry 3% of respondents actually using CASE design and analysis tools for more than 50% of all new application development; only 7% reported code generation tools in use.

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A

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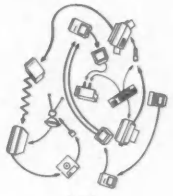

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CALENDAR

AUG. 16-22

Sigcomm '92. Baltimore, Aug. 17-20 — Contact: Dr. Sidhu, Menlo Park, Calif. (301) 455-3028.

Windows & OS/2 Conference. Boston, Aug. 19-21 — Contact: CM Ventures, Inc., Emeryville, Calif. (510) 601-5000.

AUG. 23-29

Interex Users Conference. New Orleans, Aug. 23-27 — Contact: Michelle Pettigrew, Interex, Sunnyvale, Calif. (408) 738-4848.

SynOptics User Group Conference. Washington, D.C., Aug. 24-26 — Contact: Dennis Farr, SynOptics User Group, Santa Clara, Calif. (408) 988-2400.

Marketing the IS Organization Internally. Chicago, Aug. 25-26 — Contact: The Ouellette & Associates Registrar, Bedford, N.H. (603) 623-7373.

Auto-Tech. Detroit, Aug. 25-27 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

Downsizing Expo. San Francisco, Aug. 25-27 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Cohesion Conference. Boston, Aug. 26-28 — Contact: Stephanie Vickers, BIS Strategic Decisions, Norwell, Mass. (617) 878-6650.

Computerfest '92. Dayton, Ohio, Aug. 29-30 — Contact: Mark Hanslip, DMA Computerfest, Dayton, Ohio. (513) 263-3378.

AUG. 30-SEPT. 5

Primavera Systems, Inc.'s Ninth Annual User Conference. Philadelphia, Aug. 30-Sept. 2 — Contact: Primavera Systems, Inc., Bala Cynwyd, Pa. (215) 660-5830.

Surface Mount International Conference. San Jose, Calif., Aug. 30-Sept. 3 — Contact: SMTA, Edina, Minn. (612) 920-7682.

International Training Conference & Exposition. Anaheim, Calif., Aug. 31-Sept. 2 — Contact: Russell F. McKinnon, Trade Associates, Inc., Rockville, Md. (301) 468-3210.

SEPT. 6-12

Rocky Mountain Computer Conference and Exposition. Denver, Sept. 8-10 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

SEPT. 13-19

Buscon '92/East. Boston, Sept. 15-17 — Contact: Buscon '92, Norwalk, Conn. (203) 852-0500.

DOD-STD Conference. Washington, D.C., Sept. 15-17 — Contact: David Maibor Associates, Inc., Needham, Mass. (617) 449-6554.

Crystal Ball '92. San Diego, Sept. 17-19 — Contact: Acucobol, San Diego, Calif. (619) 689-7220.

DevCon '92. Phoenix, Sept. 18-23 — Contact: Microsoft Fox, Inc., Perrysburg, Ohio. (800) 927-6368.

SEPT. 20-26

Sapphire '92. Orlando, Fla., Sept. 20-23 — Contact: Sylvia Bauer, SAP Canada, North York, Ontario. (416) 229-0574.

Pen-Based Expo. Los Angeles, Sept. 21-23 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Image World. New York, Sept. 21-25 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Virtual Reality '92. Westport, Conn., Sept. 23-25 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

The Fifth Annual New England Computer Operations Conference. South Portland, Maine, Sept. 24-25 — Contact: Jerome Lemelin, Portsmouth Naval Shipyard, Portsmouth, N.H. (207) 438-2815.

SEPT. 27-OCT. 3

Sensors Expo's Seventh Conference. Chicago, Sept. 29-Oct. 1 — Contact: Expocon Management Associates, Inc., Trumbull, Conn. (203) 374-1411.

The Sixth Annual Strategic Issues Conference and Client Forum. La Jolla, Calif., Sept 29-Oct.2 — Contact: Computer Intelligence, La Jolla, Calif. (619) 450-1667.

CASE World Conference & Exhibition. Boston, Sept. 30-Oct. 2 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

CD-ROM Expo '92. Boston, Sept. 30-Oct. 2 — Contact: Mitch Hall Associates, Dedham, Mass. (617) 361-2001.

Software Publishers Association (SPA) Annual Conference. Washington, D.C., Sept. 30-Oct. 3 — Contact: SPA, Washington, D.C. (202) 452-1600.

Graph Expo East '92. New York, Oct. 3-6 — Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

OCT. 4-10

The New Tools for Design and Design Production Conference. New York, Oct. 4-6 — Contact: The Center for Computer Graphics for Design, Santa Fe, N.M. (505) 986-0523.

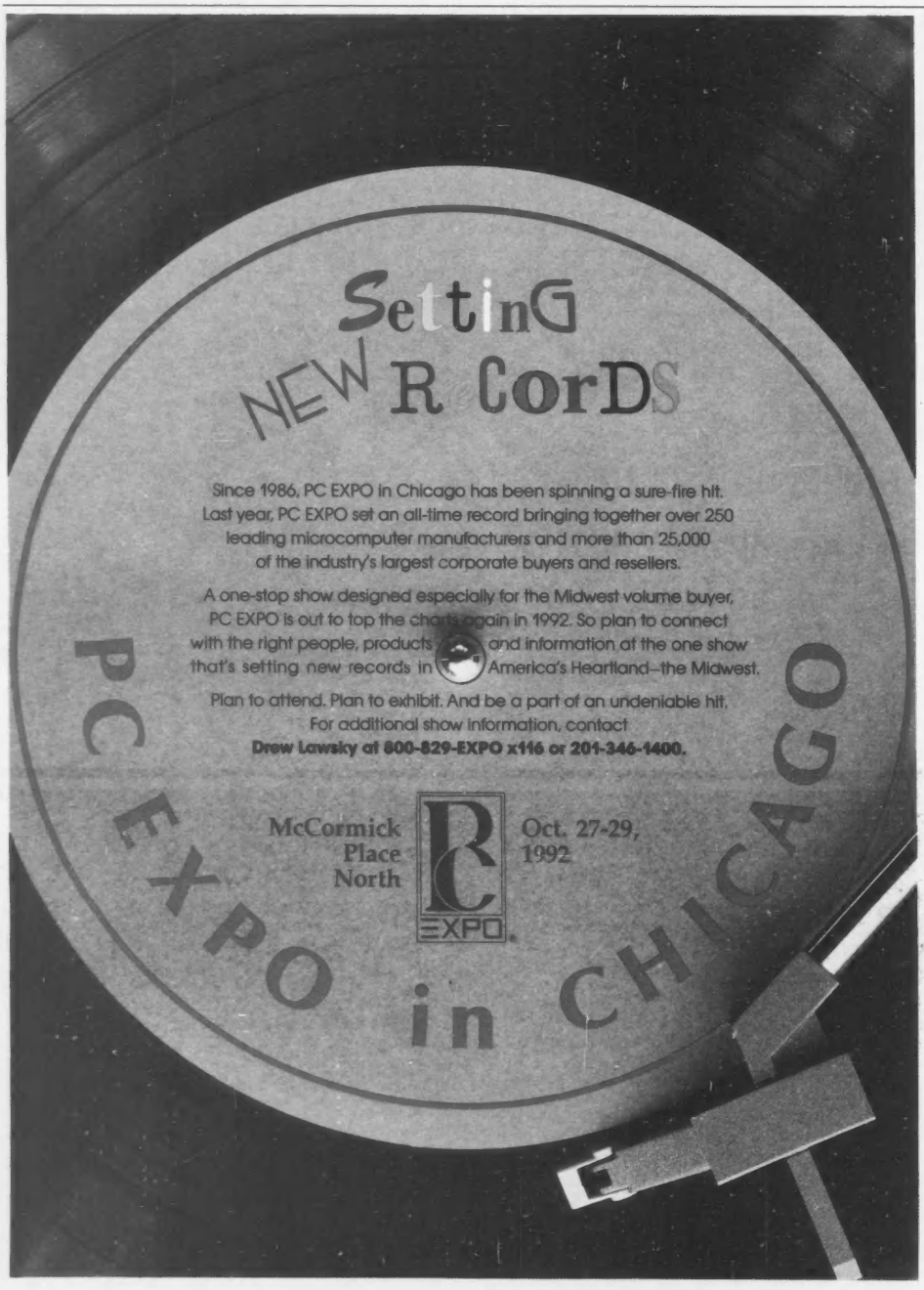
Repository Ad/Cycle International Users Group Conference. Chicago, Oct. 4-7 — Contact: Repository Ad/Cycle Group, Santa Monica, Calif. (310) 394-8305.

Electronic Data Interchange Association (EDIA) Annual Conference. Nashville, Oct. 5-8 — Contact: Gregory Harter or William Myers, EDIA, Alexandria, Va. (703) 838-8042.

Scan-Tech '92. Anaheim, Calif., Oct. 5-8 — Contact: AIM USA, Pittsburgh, Pa. (412) 963-8588.

OCT. 11-17

Networld '92. Dallas, Oct. 13-15 — Contact: Kathy Ryan, Networld, Fort Lee, N.J. (201) 346-1400.



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Page 104

Early retirement: Look before you leap

BY SALLY CUSACK
SPECIAL TO CW

When a company dangles a lucrative early retirement package, many information systems professionals take the money and run, assuming they can enjoy a long, much-deserved vacation and look for employment later on — if need dictates.

Unfortunately, need often dictates that people in their fifties keep working. While the provisions of a such a package may initially seem adequate, career counselors say many people change their mind about the arithmetic after a few months.

Rather than leaping and then being forced to look at hard financial realities, experts advise that a person offered an early exit deal spend some time looking at his current cost of living, outstanding obligations and the holes that inflation could make in a nest egg. Finding another position isn't as easy as people often expect.

"The financial position that people think they're moving out into is not necessarily that much of a cushion if they don't find work soon. They'll run out of cash," says Edward Perlin, president of Edward Perlin Associates, Inc., a management consulting firm specializing in data processing compensation.

In addition, executives may not realize the toll inflation can take over the years if they don't have an inflation kicker built into their retirement plan, a feature companies include less and less.

It used to be that every $10,000 of retirement pay would last a month while you're looking for other work. But these days, that same $10,000 must be spread over a month and a half or two months.

Jerry Kanter, director of the Center for Information Management Studies at Babson College in Wellesley, Mass., says a skills assessment is necessary for IS people who have determined they need a weekly paycheck even after the retirement package.

However, most people currently eligible for early retirement worked in the days of the large, bureaucratic company, where it is sometimes difficult for them to keep current in the latest technology while doing their everyday work, Kanter says.

For example, working on a large Cobol project doesn't require learning the popular personal computer-based spreadsheet programs or database packages — skills that are almost a prerequisite for employment at almost any level these days.

Kanter, who took an early retirement package from Honeywell Information Systems, Inc. several years ago at age 57, suggests re-establishing oneself in current technology by learning PC skills such as spreadsheets, databases and client/server. This can be self-taught at home or through specialized courses.

"The key is to work on [your options] ahead of time and not wait for the letter," Kanter says. Even if a company is not in financial difficulty, you should be thinking about options, he adds. "Anything can happen to anyone through a merger or an acquisition."

Cost-cutting style

Early retirement programs seem to be more in vogue today as a cost-cutting measure. Large companies such as IBM, Aetna Life and Casualty Co., The Travelers Corp. and Digital Equipment Corp. have been known to offer lucrative programs for early retirement.

Perhaps most crucial for early retirees in need of a steady income is the age factor. Chick Bisberg, president of information technology recruitment at Two-Party Systems, Inc. in Livingston, N.J., says some people grab the proffered package, thinking they can get a job tomorrow.

But the reality is that most people eligible for early retirement hold fairly senior-level positions and higher salaries, and companies can often hire someone younger for a smaller salary.

Bisberg acquired 180 new IS candidates last year, and between 25 and 30 of these people had taken early retirement plans. He estimates that perhaps four or five of them have found other IS positions.

Ken Graham, vice president of IS at the Robert Mondavi Winery in Oakville, Calif., agrees that IS jobs are not easy to find for older candidates. Graham, who had 23 years of IS experience at a competing winery, signed on at Mondavi in the late 1980s.

He says it was easier for him to pick and choose because he had independent income.

Networking is one way to get ahead and sound out the current employment situation. Raymond O. Vander Vliet, vice president and general manager of Bank of America's San Francisco data center, strongly advises IS professionals to improve their network.

A 30-year veteran of IBM, Vander Vliet was 51 when he took an early retirement option in 1989. Feeling "too young for the rocking chair," he took a position at the bank the following month.

"That Big Blue blanket is pretty secure, and I had to make sure my networks were intact and learn there were other worlds out there," Vander Vliet recalls.

Local computer user groups are also a good place to talk to others who are familiar with the latest technology and can exchange ideas. Kanter says finding a mentor, either a friend or user group member who can help you learn about various technologies, is also helpful.

Whether you decide to obtain a similar position at another company, become an independent IS consultant or enter another field, your chances of obtaining the job you want will improve if you are prepared.

Cusack is a free-lance writer based in Marstons Mills, Mass.

Advice

Before you accept an early retirement offer, take some advice from firsthand experiences of early IS retirees and employment experts:

- Thoroughly assess both your current and near future financial situation. Take into account inflation, dependent children and elderly parents, as well as monthly bills, bank account balances and investments.
- Examine the marketability of your current skill set, and take the steps necessary to become current in today's technology.
- Use and expand your network; many full-time jobs and independent consulting contracts are delivered by word of mouth. Join local computer user groups.
- Talk to those who have taken a similar package, and compare notes on the advantages and disadvantages.

SALLY CUSACK

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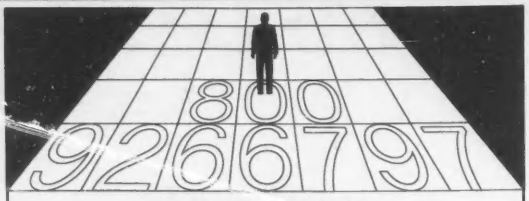

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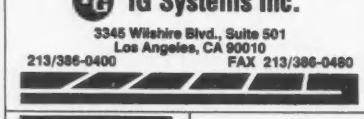

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Investment houses go for broke hiring IS professionals

BY LESLIE GOFF
SPECIAL TO CW

Since Wall Street went bust a few years back, the operative word at many brokerage firms has been "broke."

Big investment houses axed thousands of jobs after the 1987 crash, including many information systems professionals'.

Yet judging from the upbeat attitude of many in the field, you'd never know it. In fact, several IS and human resource managers in the industry say they are actively seeking new hires for systems positions.

"Financial services is a very good growth area for IS," declares Deborah Bresette, vice president of human resources at Fidelity Systems Co., the Boston-based IS division of Fidelity Investments.

Firms are trying to distinguish themselves in a tough market by offering customers fast, easy access to timely information, she explains, so IS remains a top priority.

Crazy? Consider that several other major brokerage houses say that they, too, are hiring at least as many IS staff members as in recent years and sometimes more.

"Most of us recognize that we can't afford the boom and bust management style of the past: Business is good, hire; business is bad, fire," says Robert Benmosche, executive vice president of administration, operations and IS at PaineWebber, Inc. in Lincoln Harbor, N.J. "We have to be more long-term about how we approach [hiring] now."

As proof, Benmosche says he'll hire about 10% of his IS staff during the next 12 months, while present employees are trained in new technologies.

Or consider Alex. Brown & Sons, Inc. The Baltimore company has been expanding its staff by 7% annually, and will do so again in 1992, according to Thomas Shipley, manager of IS and a principal at the firm.

Similarly, Charles Schwab Corp. in San Francisco is hiring new personnel to maintain and enhance mainframe systems while current staff is trained in computer-aided software engineering (CASE) and workstations, says Dawn Lepore, senior vice president of development at the information services division.

The new hires will play a key role in a major initiative to revamp existing systems, Lepore says.

Is it possible that the continuing recession and the stubborn 7% to 8% unemployment rate had no effect on nationwide IS hiring in financial services?

Not so fast, says Martin Frank, a New York-based mainframe programmer who has six years of brokerage experience.

A consultant for the last two years and currently between projects, Frank sees a discrepancy between what IS departments say and what they do. He contends that the recession has indeed taken a heavy toll on IS jobs.

"A lot of programmers are sitting at home watching cable," Frank says. "There is a lot of work to be done, but companies are loathe to hire people to do it because their profits could downturn and then they're stuck with extra people to take care of."

Who's right? There appears to be truth on both sides.

"We're being careful about where we're hiring and where we're applying people," Lepore concedes. In many cases, firms such as Charles Schwab and PaineWebber are focusing on retraining present employees in new technologies rather than recruiting new staff.

"We're being careful about hiring for the right areas," Lepore says. "But we are actively hiring."

IS chiefs contend jobs are available for dream candidates who combine technical and interpersonal skills with business savvy and an understanding of users.

Although experience in the industry is important, companies say, technology professionals from other businesses have a decent chance of finding work if they are proficient in workstation, database or CASE technologies.

As everywhere, demand for mainframe Cobol programming skills has tapered off in favor of C++ and Unix. Programmers experienced in Oracle Corp., Sybase, Inc., The Ask Cos. or SQL relational databases are also in demand. So are those with local- and wide-area networking and telecommunications knowledge.

And, of course, IS managers say knowing the securities business is a strong plus.

Bresette and others say the long-term career outlook is good for both technical specialists and development managers in brokerage firms, thanks to rapid technological change.

"The outlook is still positive for people who have been in the market for a while if they get additional training," Shipley says. "But they need new skills to vie for the positions currently available and those available in the near future."

That's the same path that Frank is taking. Frank says he plans to spend the summer studying CICS, DB2 and personal computer programming in hopes of landing a management or project management job.

But what if you're an outsider farsighted or crazy enough to set your sights on an IS job at a securities firm? How do you start?

Besides following the basics — preparing a two-minute bio, bringing an extra resume — Bresette advises scheduling several 15- to 20-minute informational interviews with human resources and IS staff members at brokerage firms.

"Usually HR people will respond well because companies want good relations with the community," she says.

Goff is a New York-based free-lance writer.

Outlook: Brokerage

Where the jobs are: Best opportunities are in the Northeast, especially metropolitan New York. Florida is also becoming popular.

Salaries: Super. As much as 50% higher than other industries. An IS pro with three to five years of experience averages $50,000 to $65,000. Bonuses can add $20,000 to $30,000. IS directors make $250,000 to $1 million a year. Best pay for all levels is at big Wall Street firms such as Goldman, Sachs & Co.

Hottest job titles: Programmer/analyst, business analyst, LAN manager, database manager, systems manager, IS director.

Hot technical skills: C, Unix, Oracle, Sybase, Ingres.

Long-term outlook: Excellent. Heavy automation during the next five to 10 years will result in fivefold increase in jobs. Many new management jobs. Overall, IS will increase in value.

Information provided by George Davidsohn, chief executive officer at George Davidsohn & Son, Inc., a New York consultancy.

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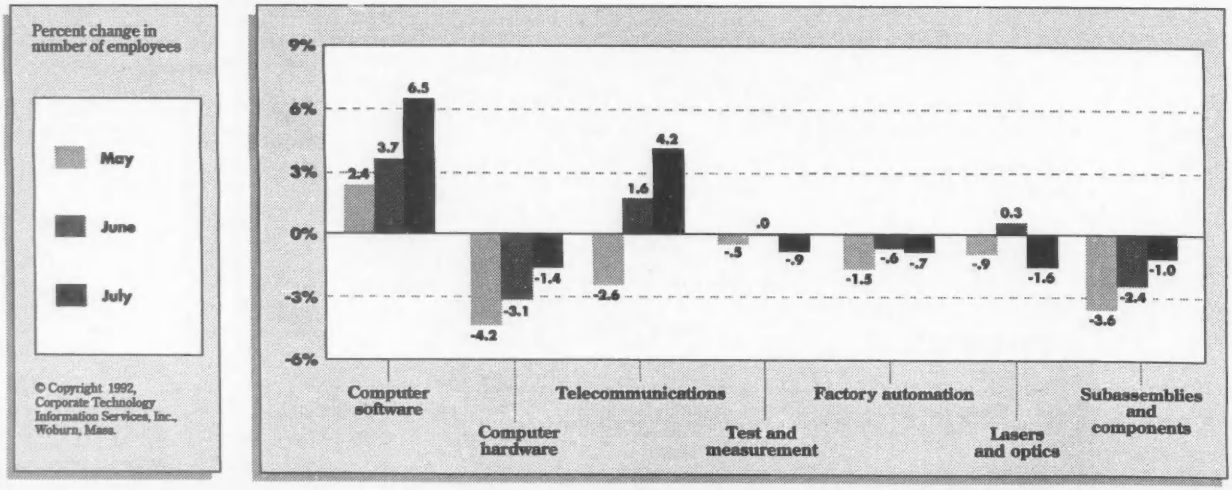

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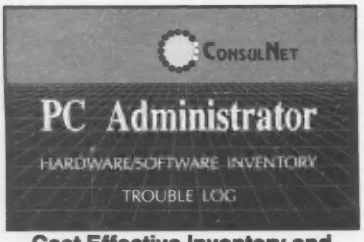

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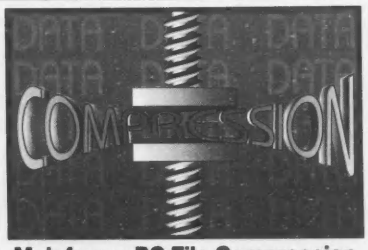

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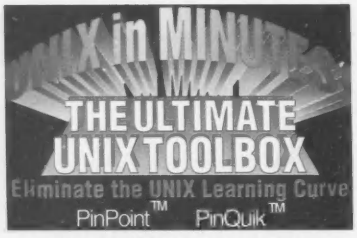

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What you must know to keep telecom costs low

BY CAROLINE J. MICHEL
SPECIAL TO CW

When it comes to choosing telecom service, cost is one of the Top 3 concerns, closely followed by reliability and security.

If only costs were easier to control. The fact is, even with prices for digital service expected to drop and many discount programs in place, there are no specific rules to determine which carrier or service is the cheapest.

To help you pick the best carrier, here are a few factors that affect telecom costs the most:

•Location, location, location. These three words are critical for choosing a network service. How far your site is from the interexchange carrier, how remote your location is, the distance between your site and an interexchange carrier's digital point of presence — these play a large role in your final costs.

Location is a concern especially in the U.S., where there are local and interexchange carriers. That's because it's up to the buyer to coordinate the services of each, which isn't easy because they don't always match each other service for service.

Additionally, service availability may not be consistent between local and long-distance carriers. For instance, many local carriers don't offer fractional T1 or the breadth of switched digital services. Often this makes it necessary for users to lease a line to the interexchange carrier.

•City pairs. Carrier prices vary greatly. Usually, the longer the distance, the more divergent the cost. Common denominators between carriers' leased line pricing comprise monthly recurring charges and per-mile charges. These vary from carrier to carrier and can significantly impact monthly network costs.

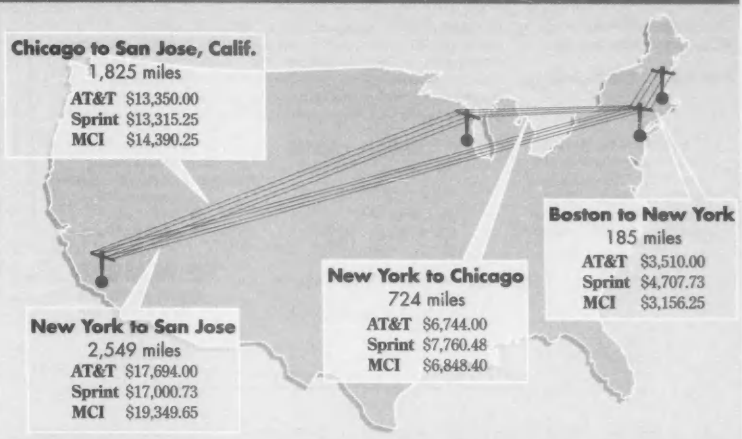
•Customer premises equipment. If you don't feel you've gotten a full return on investment from your existing equipment, you may want to base your selection on the capabilities of that equipment.

However, some of the newer service options require specific customer premises equipment, which you might need to purchase directly from the interexchange carrier. While carrier-provided customer premises equipment can be desirable, be aware that buying this equipment could tie you to that carrier's service more closely than carrier-dependent customer premises equipment.

•Discounts. Carriers may offer both volume and standard term discounts for specific offerings. High volume and lengthy contracts will garner better discounts, which can run as deep as 5% to 20%. More important is to make sure you will be able to alter the initial service contracts for little or no penalty. This convenience isn't often publicized but can be negotiated.

Michel is an analyst in International Data Corp.'s Carrier Services Program in Framingham, Mass.

Selected T1 long-distance leased service prices



Additional long-distance leased service prices

		Boston to NY	NY to Chicago	NY to San Jose	Chicago to San Jose
56K	AT&T	$1,000.20	$2,022.60	$4,395.10	$3,453.90
	Sprint	$963.70	$1,030.84	$1,483.34	$1,355.10
	MCI	$944.75	$1,893.28	$4,119.78	$3,236.50
256K	AT&T	$1,106.49	$1,764.07	$3,990.57	$3,107.29
	Sprint	$2,270.48	$2,946.24	$4,138.24	$3,645.80
	MCI	$1,884.54	$1,733.12	$3,795.37	$2,977.25
768K	AT&T	$2,595.70	$4,137.24	$9,356.74	$7,286.10
	Sprint	$3,254.18	$4,533.62	$7,769.62	$6,466.10
	MCI	$2,680.10	$4,221.64	$9,441.14	$7,370.50

Prices reflect interexchange carrier monthly recurring and access costs

Source: AT&T, Sprint Corp., MCI Communications Corp. and International Data Corp.

CW Chart: Michael Siggins

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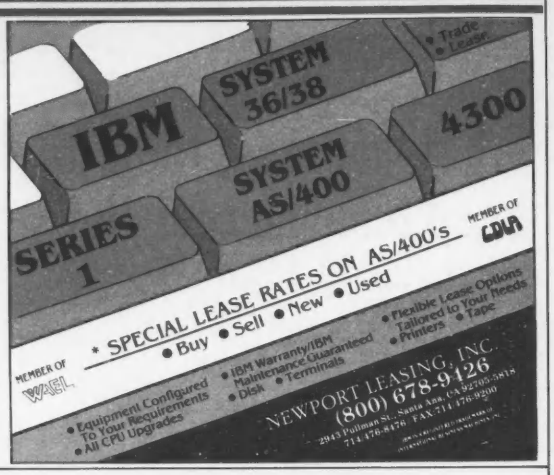

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The BoCoEx index on used computers

Closing prices report for the week ending July 24, 1992

	Closing price	Ask	Bid
IBM AT 339	$450	$700	$200
PS/2 Model 30 286	$500	$900	$300
PS/2 Model 35SX	$1,175	$1,300	$800
PS/2 Model 55SX	$1,000	$1,300	$800
PS/2 Model 60	$600	$900	$325
PS/2 Model P70	$2,000	$2,500	$1,500
PS/2 Model 80	$1,500	$1,800	$1,100
PS/2 Model 95	$4,400	$5,000	$4,000
Compaq Portable II	$425	$500	$375
Portable III	$500	$600	$250
Portable 386	$1,300	$1,800	$1,000
SLT-286	$700	$900	$400
LTE-286	$850	$1,000	$500
Deskpro 286E	$500	$1,000	$325
Deskpro 386/33	$1,850	$2,250	$1,400
Apple Macintosh Classic	$750	$875	$500
SE	$725	$775	$500
IIX	$2,550	$2,850	$2,000
IICI	$3,100	$3,600	$2,460
IIFX	$4,100	$4,900	$3,700

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REQUEST FOR QUALIFICATIONS

The Sewerage and Water Board of New Orleans is soliciting statements of qualifications from organizations capable of providing data processing facilities management for its Information Systems Department. The company providing this service must be qualified and experienced with the latest technology in the field. The scope of the work consists of three major areas for a Mainframe and PC/Network environment: operations, maintenance and development. At present, the Board's intention is to continue to use its current hardware, software and applications.

The major operation of the Sewerage and Water Board of New Orleans is providing water, sewerage and drainage services for the City of New Orleans.

Parties interested in obtaining this RFQ should contact the Sewerage and Water Board's Purchasing Department by phone at (504) 585-2124 or by FAX at (504) 585-2150.

ATTN: FLEET SOFTWARE COMPANIES

The City of St. Petersburg, Florida is soliciting proposals for an application software for a fleet maintenance management system that operates on an IBM AS/400 mainframe.

For further information, contact Linda Marckese, CPPB, Senior Buyer, at 813-893-7220.

MS CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by CDPA, 301 N. Lamar St., 301 Bldg. Suite 508, Jackson, MS 39201 for the following:

RFP No. 2234, due Wed, 9/2/92 at 3:30 p.m. for a PC based data entry software package for MISSISSIPPI STATE UNIVERSITY. No charge.

RFP No. 2235, due Tues, 8/25/92 at 3:30 p.m. for a Local Area Network consisting of one file server, an asynchronous server, fourteen workstations, various software packages, and miscellaneous hardware peripherals for the DEPARTMENT OF REHABILITATION SERVICES. Charge $10.00.

RFP No. 2236, due Tues, 8/18/92 at 3:30 p.m. for disk optimizing and communications software packages for the Data General MV30000 and AViiON 5400 of the MS DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT. No charge.

RFP No. 2237, due Tues, 8/18/92 at 3:30 p.m. for a PC-based cataloging software package for the DEPARTMENT OF ARCHIVES AND HISTORY. No charge.

Detailed specifications for each RFP with a charge may be obtained by submitting a written request accompanied by the appropriate payment. No phone requests will be accepted. NOTE: Valid forms of payment are corporate checks on a Mississippi bank, certified check or POSTAL money order made out to Central Data Processing Authority. **No cash or out-of-state-checks.** For RFPs with no charge call Kelli Brown @ 601-359-2604. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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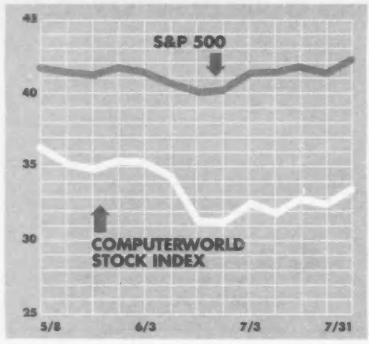

Industry Almanac

RECOMMENDATION CHANGES

UPGRADED FROM BUY TO STRONG BUY: **Informix Corp.** (Alex. Brown & Sons, Inc.). Second-quarter results for Informix (IFMX) were extremely strong. Well ahead of Wall Street predictions, the company's reported revenue was $60.3 million, marking the fourth quarter in a row that it has posted better than expected operating results.

Overall, during the second quarter, Informix, a supplier of Unix-based relational database management systems and application development tools, experienced strong growth. Near-term problems appear minimal, and for the long term, expect a 30% annual revenue growth that will be cushioned by the company's current strong new product cycle.

UPGRADED FROM BUY TO STRONG BUY: **Maxtor Corp.** (Bear, Stearns & Co.). Stronger than expected earnings were posted by Maxtor (MXTR). Revenue was recorded at $327 million, rising 39% from last year. Strength from the disk drive industry and the force of new products such as the 200M-byte 3½-in. drive provided the revenue growth. Maxtor has put a great deal of investment into research and development spending — a move that should enable a steady pace of new product launches and continued revenue and earnings momentum.

DOWNGRADED FROM BUY TO HOLD: **Micrografx, Inc.** (Needham & Co.). Richardson, Texas-based Micrografx (MGXI) generated 87% of its total revenue from three products: Designer, Charisma and Windows Draw. The remaining revenue came from clip art and imaging editing products and from graphics-oriented systems software products and services. International markets accounted for 53% of fiscal 1992's revenue.

Micrografx reported that it will reach Wall Street revenue estimates in the $13 million to $15 million range. This leaves a large gap for disappointment because plans of surpassing those estimates never materialized, and a revenue shortfall leaves room for a bad earnings surprise. Renewal of a contract with **IBM** to design OS/2 systems software development is anticipated, but it is still unclear when a new contract will be signed.

LISA DAVIDSON

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, JULY 31, 1992

TOP PERCENT GAINERS

Al Corp.	58.33
Cray Computer (L)	27.78
Data Switch Corp.	25.03
Printronix Inc.	23.81
Silicon Graphics	21.92
Dataram Corp.	20.95
Borland Int'l Inc.*	20.50
Parametric Technology	20.00

TOP PERCENT LOSERS

Wang Labs Inc. (b)*	-18.18
Advanced Logic Research	-14.29
Sequoia Systems Inc.	-13.73
Group I Software	-13.16
Everex Systems Inc. (L)	-12.00
Software Toolworks Inc.	-12.00
Meca Software (L)	-11.11
Cognitronics Corp.	-9.47

TOP DOLLAR GAINERS

Borland Int'l Inc.*	8.13
Parametric Technology	6.75
Computer Sciences*	6.38
Wellfleet Communications	5.88
Legent Corp.*	4.63
Stratus Computer Inc.*	4.25
Policy Management Sys.	4.13
Silicon Graphics	4.00

TOP DOLLAR LOSERS

Group I Software	-2.50
Octel Communications Corp.	-2.50
Struct. Dynamics Research	-1.50
Sun Microsystems Inc.*	-1.25
Cognitronics Corp.	-1.13
Digital Equipment Corp.*	-1.13
Bachman Info. Systems	-1.00
Sierra Semiconductor (L)	-1.00

Exch	52-Week	Range		July 31 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						**Up 3.18%**
OTC	15.00	6.75	3 COM Corp.*	12.13	-0.25	-2.02
NYS	69.50	56.25	American Info Techs Corp.*(H)	69.50	1.75	2.58
NYS	44.88	32.88	AT&T*	44.00	1.00	2.33
OTC	4.25	1.00	Artel Communication Corp.	1.25	-0.13	-9.09
NYS	50.63	40.25	Bell Atlantic Corp.	47.50	0.75	1.60
NYS	53.25	43.38	Bellsouth Corp.	52.75	2.13	4.20
NYS	7.25	4.13	Bolt, Beranek & Newman	4.50	0.00	0.00
NYS	65.88	36.63	Cabletron Systems	54.50	2.00	3.81
OTC	31.00	15.00	Chipcom Corp.	24.25	2.25	10.23
OTC	53.38	18.63	Cisco Systems Inc. (H)	53.38	1.63	3.14
OTC	35.25	8.00	Compression Labs Inc.	8.00	0.00	0.00
OTC	3.38	0.88	Data Switch Corp.	2.19	0.44	25.03
NYS	23.63	12.38	Digital Comm. Assoc.*	19.13	0.38	2.00
OTC	17.50	8.00	Digital Systems Int'l Inc.(L)	9.00	0.38	4.35
OTC	7.00	3.63	DSC Communications	6.00	-0.13	-2.04
OTC	10.88	4.75	Fibronix Int'l Inc.	6.00	0.50	9.09
OTC	37.50	10.50	Filenet Corp.	15.25	-0.25	-1.61
OTC	3.38	1.13	Gandalf Technologies Inc.	2.69	0.13	4.88
OTC	2.25	0.69	Gateway Communications	1.44	0.22	17.97
NYS	5.50	2.13	General Datacomm Inds.	3.75	-0.13	-3.23
ASE	5.88	0.50	Go Video	2.88	0.13	4.55
NYS	35.00	28.13	GTE Corp.*	34.88	0.75	2.20
NYS	70.63	50.00	ITT Corp.	67.75	2.75	4.23
OTC	36.13	25.25	MCI Commmunications Corp.	33.75	1.38	4.25
OTC	14.50	2.25	Microcom Inc.	3.38	-0.25	-6.90
NYS	18.25	9.50	Network Equipment Tech.*	10.13	-0.13	-1.22
OTC	25.50	6.75	Network General	9.50	0.00	0.00
OTC	20.00	8.50	Network Systems Corp.	11.50	0.75	6.98
OTC	17.88	5.50	Newbridge Networks Corp.	17.00	1.25	7.94
NYS	49.25	33.75	Northern Telecom Ltd.*	34.88	-0.38	-1.06
OTC	65.00	28.50	Novell Inc.*	55.00	1.00	1.85
NYS	83.00	69.13	Nynex Corp.*	83.00	2.63	3.27
OTC	37.50	16.50	Octel Communications Corp.	24.00	-2.50	-9.43
OTC	9.88	4.00	Penril Data Comm. Ntwks. (L)	4.25	0.00	0.00
OTC	53.00	17.00	Picturetel Corp.	19.00	0.25	1.33
OTC	18.75	9.75	Proteon Inc.	14.63	1.13	8.33
NYS	25.50	11.63	Scientific Atlanta Inc.	25.50	0.88	3.55
NYS	66.25	51.50	Southwestern Bell Corp.	65.88	1.25	1.93
NYS	27.25	20.75	Sprint Corp.	23.25	1.13	5.08
OTC	13.75	4.00	Standard Microsystems Corp	11.63	0.13	1.09
OTC	35.13	14.25	Synoptics Communications	35.13	2.13	6.44
NYS	39.50	32.88	US West Inc.	39.50	0.50	1.28
OTC	41.25	22.25	Wellfleet Communications	39.00	5.88	17.74
PC and Workstations						**Up 0.90%**
OTC	15.00	4.50	Advanced Logic Research	4.50	-0.75	-14.29
OTC	70.00	42.75	Apple Computer Inc.*	46.75	0.88	1.91
OTC	32.25	12.00	AST Research Inc.*	13.88	0.75	5.71
NYS	19.25	9.00	Commodore Int'l	9.63	0.00	0.00
NYS	37.50	22.13	Compaq Computer Corp.*	29.50	0.00	0.00
OTC	29.00	13.91	Dell Computer Corp.	23.00	2.50	12.20
OTC	7.75	2.13	Everex Systems Inc. (L)	2.75	-0.38	-12.00
NYS	34.00	21.25	Harris Corp.	28.50	1.13	4.11
NYS	85.00	44.63	Hewlett-Packard Co.*	73.50	2.00	2.80
NYS	29.75	14.13	Silicon Graphics	22.25	4.00	21.92
OTC	35.88	20.75	Sun Microsystems Inc.*	26.75	-1.25	-4.46
NYS	31.25	22.50	Tandy Corp.*	24.75	0.50	2.06
NYS	11.13	5.13	Zenith Electronics	7.50	-0.38	-4.76
OTC	25.50	4.50	Zeos International Ltd. (L)	4.75	-0.13	-2.56
Large Systems						**Up 2.26%**
ASE	20.63	11.63	Amdahl Corp.*	13.63	-0.50	-3.54
NYS	16.13	7.50	Ceridian Corp. (H)	15.38	-0.13	-0.81
NYS	16.38	5.75	Convex Computer (L)	6.50	0.63	10.64
OTC	19.63	1.88	Cray Computer (L)	2.88	0.63	27.78
NYS	52.25	23.25	Cray Research Inc.* (L)	25.13	1.00	4.15
NYS	22.50	7.13	Data General Corp.	9.00	0.13	1.41
NYS	69.13	33.25	Digital Equipment Corp.*	39.25	-1.13	-2.79
NYS	106.38	91.63	IBM*	94.75	2.25	2.43
NYS	124.75	93.50	Matsushita Electronics	97.50	2.50	2.63
OTC	19.75	9.50	Pyramid Technology	10.50	0.25	2.44
OTC	17.88	7.50	Sequent Computer Sys.	16.13	1.13	7.50
OTC	18.38	5.00	Sequoia Systems Inc.	5.50	-0.88	-13.73
NYS	54.25	34.13	Stratus Computer Inc.*	46.00	4.25	10.18
NYS	15.13	9.50	Tandem Computers Inc.*	11.13	0.25	2.30
NYS	11.75	3.63	Unisys Corp.*	10.25	0.38	3.80
ASE	7.50	2.00	Wang Labs Inc. (b)*	2.25	-0.50	-18.18
Software						**Up 4.61%**
OTC	68.50	36.00	Adobe Systems Inc. (L)	38.00	1.75	4.83
OTC	13.25	2.50	Al Corp.	4.75	1.75	58.33
OTC	45.00	11.50	Aldus Corp.	14.63	0.13	0.86
OTC	19.75	10.13	American Software Inc.	14.00	0.13	0.90
OTC	20.00	7.50	Ask Computer Systems	15.13	2.13	16.35
OTC	57.25	23.25	Autodesk Inc.	42.50	3.38	8.63
OTC	37.75	8.25	Bachman Info. Systems	10.25	-1.00	-8.89
OTC	42.50	29.00	BGS Systems Inc.	36.50	0.63	1.74
OTC	79.00	37.25	BMC Software Inc.	52.75	4.00	8.21
OTC	20.50	9.00	Boole & Babbage	18.25	0.50	2.82
OTC	86.75	36.50	Borland Int'l Inc.*	47.75	8.13	20.50
OTC	11.25	3.63	CE Software	5.13	0.63	13.89
ASE	14.38	6.50	Cheyenne Software Inc.	11.75	1.25	11.90
OTC	20.38	7.25	Cognos Inc.	8.75	-0.13	-1.41
NYS	17.00	7.50	Computer Associates*	14.50	0.75	5.45
OTC	21.50	8.50	Comshare Inc.	10.13	1.38	15.71
OTC	47.88	6.50	Easel Corp.	8.00	0.50	6.67
OTC	20.88	9.25	Goal Systems Int'l (H)	20.88	2.50	13.61
OTC	25.50	11.50	Group I Software	16.50	-2.50	-13.16
OTC	6.63	3.50	Hogan Systems Inc.	4.38	-0.25	-5.41
OTC	36.25	18.50	Information Resources	24.75	-0.25	-1.00
OTC	37.75	5.50	Informix Corp. (H)	37.75	1.25	3.42
OTC	22.75	12.50	Intergraph Corp.	15.00	0.75	5.26
OTC	15.00	5.13	Interleaf Inc.	9.63	-0.38	-3.75
OTC	20.25	8.50	Intersolv Inc.	15.13	1.63	12.04
OTC	30.00	10.50	Knowledgeware Inc.	13.50	0.75	5.88
OTC	45.25	20.25	Legent Corp.*	40.00	4.63	13.07
OTC	40.75	15.50	Lotus Development*	18.25	-0.50	-2.67
OTC	7.38	2.00	Meca Software (L)	2.00	-0.25	-11.11
OTC	22.25	6.50	Mentor Graphics	8.00	-0.75	-8.57
OTC	20.50	6.50	Micrografx Inc.	9.38	0.25	2.74
OTC	88.84	47.84	Microsoft Corp.*	72.75	0.00	0.00
OTC	21.13	8.88	Oracle Corp.*	18.63	-0.25	-1.32
OTC	41.25	13.88	Parametric Technology	40.50	6.75	20.00
OTC	11.00	3.50	Phoenix Technologies	4.63	-0.25	-5.13
OTC	25.25	10.63	Platinum Technology	16.75	-0.50	-2.90
OTC	46.50	27.75	Progress Software Corp.	40.25	2.25	5.92
OTC	26.63	4.00	Quarterdeck Office Sys.	4.75	-0.13	-2.56
OTC	32.75	10.25	Rainbow Technologies Inc.	19.00	1.25	7.04
OTC	29.50	8.75	Rasterops	11.25	-0.25	-2.17
OTC	17.25	5.38	Ross Systems	8.00	0.00	0.00
OTC	26.25	7.50	Software Publishing Corp.	9.50	1.25	15.15
OTC	8.50	2.00	Software Toolworks Inc.	2.75	-0.38	-12.00
OTC	7.25	1.75	Spinnaker Software	3.00	0.25	9.09
OTC	16.50	6.25	State of the Art	7.25	0.00	0.00
NYS	25.25	11.63	Sterling Software Inc.	16.50	0.38	2.33
OTC	30.00	13.00	Struct. Dynamics Research	15.00	-1.50	-9.09
NYS	31.75	15.00	Sybase Inc.	30.38	2.13	7.52
OTC	51.00	18.00	Symantec Corp. (L)	21.00	0.88	4.35
NYS	15.50	5.25	Systems Center Inc.* (L)	6.75	1.13	20.00
OTC	34.25	8.66	System Software Assoc	26.25	-1.00	-3.67
OTC	23.75	14.50	Walker Interactive Systems	16.75	1.50	9.84
OTC	6.63	2.13	Wordstar	2.63	0.13	5.00
Semiconductors						**Up 2.25%**
NYS	21.50	7.38	Advanced Micro Devices	8.88	0.38	4.41
NYS	11.13	7.00	Analog Devices Inc.	9.75	0.38	4.00
OTC	14.13	6.75	Atmel Corp.	8.63	-0.25	-2.82
OTC	14.13	4.75	Chips and Technologies	5.00	0.25	5.26
NYS	22.63	7.38	Cypress Semiconductor Corp	9.25	-0.38	-3.90
NYS	10.13	6.25	Dallas Semiconductor	9.88	0.25	2.60
OTC	68.75	38.50	Intel Corp.*	59.75	1.50	2.58
NYS	9.88	5.50	LSI Logic Corp. (L)	5.88	0.38	6.82
NYS	22.38	11.13	Micron Technology	16.25	1.25	8.33
NYS	85.63	54.00	Motorola Inc.* (H)	85.63	2.00	2.39
NYS	11.50	3.88	National Semiconductor*	10.25	0.50	5.13
OTC	27.00	10.13	Sierra Semiconductor (L)	10.13	-1.00	-8.99
NYS	41.88	26.00	Texas Instruments* (H)	41.88	1.38	3.40
OTC	10.50	5.88	VLSI Technology	6.50	0.38	6.12
OTC	9.75	2.13	Weitek	3.13	0.13	4.17
ASE	5.63	2.00	Western Digital Corp.	4.63	-0.25	-5.13
NYS	32.50	17.25	Xilinx	22.75	2.00	9.64
OTC	11.50	4.63	Zilog Inc.	6.75	-0.25	-3.57
Peripherals and Subsystems						**Up 5.59%**
OTC	10.00	2.75	Archive Corp.	7.75	-0.13	-1.59
OTC	24.63	11.25	Banctec Inc.	24.63	2.88	13.22
OTC	23.50	7.00	Cambex Corp.	13.00	1.88	16.85
ASE	12.25	4.66	Cognitronics Corp.	10.75	-1.13	-9.47
NYS	23.88	12.50	Conner Peripherals*	21.50	1.13	5.52
ASE	19.66	3.47	Dataram Corp.	15.86	2.75	20.95
NYS	19.25	5.88	EMC Corp.	18.50	2.38	14.73
OTC	9.38	4.75	Emulex Corp.	7.00	0.13	1.82
OTC	23.00	14.25	Evans & Sutherland	15.50	0.75	5.08
OTC	40.63	18.25	Exabyte	31.25	1.50	5.04
OTC	27.25	15.75	Intelligent Info. Systems	24.50	-0.50	-2.00
OTC	11.25	4.63	Iomega Corp.	5.50	0.00	0.00
OTC	34.75	12.00	IPL Systems Inc. (L)	15.25	2.25	17.31
OTC	24.50	10.75	Komag Inc.	15.00	1.50	11.11
OTC	14.00	2.63	Maxtor Corp.*	12.75	-0.25	-1.92
OTC	12.63	5.75	Micropolis Corp.	10.38	0.63	6.41
NYS	100.38	83.50	3M Co. (H)	100.00	1.63	1.65
OTC	7.75	3.50	Printronix Inc.	6.50	1.25	23.81
NYS	26.75	7.00	QMS Inc.	7.75	0.00	0.00
OTC	18.00	6.88	Quantum Corp.	13.75	0.00	0.00
OTC	12.75	5.13	Radius Inc.	11.50	0.88	8.24
NYS	12.88	5.88	Recognition Equipment	8.25	0.50	6.45
OTC	13.13	5.38	Rexon Inc.	9.50	0.25	2.70
OTC	17.63	7.25	Seagate Technology*	15.38	0.25	1.65
NYS	78.00	28.13	Storage Technology*	36.00	-0.13	-0.35
NYS	30.88	16.00	Tektronix Inc.	18.38	0.13	0.68
NYS	82.25	52.63	Xerox Corp.	74.75	2.25	3.10
Services						**Up 3.45%**
OTC	18.00	11.66	American Mgmt. Systems*	17.13	0.38	2.24
NYS	5.38	2.88	Anacomp Inc.	3.38	0.00	0.00
OTC	19.00	12.25	Analysts Int'l	16.75	0.00	0.00
NYS	49.00	30.25	Auto Data Processing*	44.88	2.25	5.28
NYS	24.16	12.50	Comdisco Inc.*	16.75	1.25	8.06
OTC	13.50	7.75	Computer Horizons	8.50	-0.25	-2.86
NYS	84.88	52.25	Computer Sciences*	65.63	6.38	10.76
NYS	10.13	7.00	Computer Task Group	8.50	0.38	4.62
OTC	40.50	15.00	CompUSA Inc.	26.25	1.75	7.14
OTC	19.25	7.50	Corporate Software (L)	8.00	0.50	6.67
OTC	30.75	13.50	Egghead Discount Software	18.50	1.00	5.71
NYS	33.06	23.19	General Motors E (EDS)*	27.63	1.75	6.76
OTC	30.38	6.25	Intelligent Electronics	10.63	0.38	3.66
OTC	14.88	2.75	Marisel	10.75	0.88	8.86
OTC	15.75	7.00	Microage Inc.	8.63	-0.38	-4.17
OTC	27.50	14.16	Paychex	24.38	-0.13	-0.51
NYS	73.00	47.25	Policy Management Sys.	70.13	4.13	6.25
NYS	43.63	19.63	Reynolds and Reynolds	43.63	1.63	3.87
OTC	32.00	21.25	SEI Corp.	23.25	0.25	1.09
OTC	24.38	16.88	Shared Medical Systems	19.13	-0.63	-3.16
OTC	26.25	13.50	Sungard Data Systems	25.50	-0.25	-0.97
NYS	4.88	1.13	Ultimate Corp.	2.00	0.13	6.67

KEY: (H) = New annual high (L) = New annual low

* Companies tracked in Computerworld Stock Index

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IN BRIEF

Earnings highlights

■ Second-quarter profits at **Sybase, Inc.** more than tripled compared with last year's second quarter on a 59% jump in sales to $57.7 million. North American sales were up 67%.

■ Profits plunged 65% at **Quarterdeck Office Systems** on nearly flat sales of $12.2 million. The company blamed the profit decline on competitive pressure from **Microsoft Corp.**'s Windows and IBM's OS/2.

■ **Computer Sciences Corp.** logged a 33% increase in sales and a 12% gain in profit. The commercial side of the business was up 78% while revenue from the public sector rose only 7%.

■ An $11.5 million restructuring charge contributed to a $16 million quarterly loss at **Systems Center, Inc.** Revenue went up slightly to $31 million. The company said it will sell off its IBM Application System/400 and Unix utility products and focus on systems and network management.

■ **AST Research, Inc.** neared the billion-dollar mark with sales of $266.3 million for the fourth quarter and $944.1 million for the fiscal year. But intense price competition knocked quarterly profits back 8% to $18.6 million.

■ Just down the road, **Advanced Logic Research, Inc.** saw quarterly profits fall by more than half to $1.6 million on flat revenue of $52.7 million. The company blamed a squeeze on gross margins.

■ The acquisition of **Mips Computer Systems, Inc.** dragged down profits at **Silicon Graphics, Inc.**, which took a $109 million quarterly loss, including merger charges. But 1992 sales were up 24%.

Streamlining restores Informix to health

Software firm's prescription calls for focusing on core development — and farming out the rest

BY JEAN S. BOZMAN
CW STAFF

MENLO PARK, Calif. — Analysts credit Informix Software, Inc.'s turnabout from a year of losses in 1990 to a growth spurt this year to both a recent reduction in overhead and a restructuring of its engineering organization late last year.

Such is the reversal of Informix's fortunes — that the $179 million firm plans to surpass $200 million in sales this year by following a new formula for success: Invest in databases and tools and buy the rest.

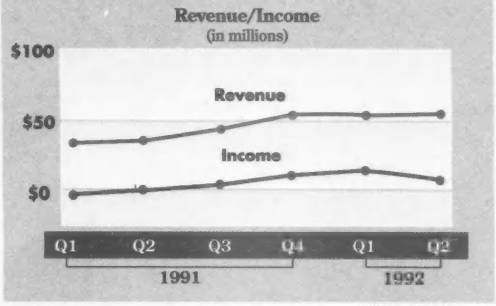
Industry analysts said that changes in the company's software engineering group were instrumental in putting Informix research and development back on track. The changes were ordered by Chuck House, senior vice president of product management and development, who was hired from Hewlett-Packard Co. in July 1991 to place a new focus on development.

"We're doing all the core development internally, and we're bolting on the rest," Informix Chief Executive Officer Phil White said last month. "We get a lot more done that way, and with fewer dollars invested."

For example, the firm is working with Sequent Computer Systems, Inc. on a parallel processing data-query product and with Siemens AG on a data dictionary/repository, White said. It licensed HP's SoftBench framework for third-party computer-aided software engineering (CASE) tools and is leaving the applications business to its network of 2,000 value-added resellers (VAR). Meanwhile, Informix engineers are putting the finishing touches on the Informix 6.0 database, due to ship in 1993.

Proven profitability

Informix has not seen red since the first quarter of 1991



CW Chart: Janell Genovese

Internal development ran into trouble in 1990, as the engineering staff struggled to juggle several projects: maintaining multiple versions of two database engines, migrating from character-based tools to graphical user interface (GUI) tools and addressing the need for CASE tools. As a result, a multithreaded server release has been delayed until next year — and a full GUI version of Informix 4GL will ship in phases.

Informix's dilemma was a function of its size, analysts said. "A lot of companies hit $150 million in annual revenue, as Informix did, and they have to stop and re-evaluate what business they are really in," said Peter Kastner, a software analyst at Aberdeen Group in Boston.

"They had a database, some office automation tools and [Innovative Software, Inc.'s] Wingz [graphical spreadsheet]. The synergy of those products wasn't all that obvious, and the company wasn't big enough to keep all those major product areas up to snuff," Kastner said.

Now, three technology centers, each of which is evaluated on a profit-and-loss basis, develop new products separately. A new product delivery center maintains several releases of existing products, enabling development teams to hand off maintenance and documentation.

A product development center will maintain at least two "code streams" for existing database and tools products, White said. "We will need to maintain multiple releases in multiple [operating] environments around the world."

Tension relief

Industry analysts said the reorganization at Informix helped ease the in-house tension between development teams that began in 1989, the year after Informix acquired Innovative Software in Lenexa, Kan. Now, they say, Informix figures it can grow its revenue and increase its share of the growing Unix database market.

But the company will face strong competitors as it expands. "Informix says they can take a bigger percentage of a bigger market," said Donald Feinberg, a senior software analyst at Gartner Group, Inc. in Stamford, Conn. "But the big guy, Oracle, is growing faster, too, and that could squeeze the other database vendors."

White said he believes Informix can keep its costs lower than a big competitor such as $1.1 billion Oracle Corp., which maintains a large, costly direct sales force. In contrast, White said, the low-end Informix SE database, sold by VARs with packaged applications, brings in revenue with relatively low overhead costs.

Key vendors taking piracy fight to the BSA

BY CHRISTOPHER LINDQUIST
CW STAFF

"There's enough of a pie that there can be more than one slice."

That was the Software Publishers Association's (SPA) response to a recent announcement by six SPA members that they will pursue both domestic and international piracy litigation through the Business Software Alliance (BSA).

The six — Aldus Corp., Lotus Development Corp., Autodesk, Inc., Novell, Inc., WordPerfect Corp. and Microsoft Corp. — are also members of the BSA, a business software consortium launched in 1988. Both the SPA and the BSA have pursued software pirates through legal avenues.

Change in focus

The move marks an expansion of the eight-member BSA's focus from strictly international issues to one that includes a domestic program. As a result, the six firms will now be able to consolidate all litigation (and cut costs) through one group rather than two.

"We've had problems here justifying funding two different operations that are essentially doing the same things," said Ryan Richards, international counsel at WordPerfect.

While the change will undoubtedly funnel more money through the BSA — settlement money won from defendants in piracy suits is returned to the BSA fund for use in future litigation — an SPA spokeswoman indicated that her organization still considers the BSA to be complementary.

Indeed, at one point in the summer of 1990, it was announced that BSA and SPA would join forces and become one organization, with the BSA functioning as the international arm of the group. Both groups are almost singularly focused on pursuing intellectual property rights.

However, it was decided that the two would be "happier to just be sister organizations," according to SPA counsel and director of litigation Ilene Rosenthal.

According to the SPA, all six BSA members in question will retain their memberships in the SPA, a claim that was confirmed both by WordPerfect and Lotus. Richards said that while WordPerfect sought to gain the efficiency of working through one organization — the BSA — for all its litigation, it still found considerable benefit in remaining an SPA member.

"The SPA is much broader and much larger," he said. "It gives us a chance to stay in touch with the software industry as a whole."

Founded in 1984, the 950-member SPA provides market data and deals with piracy litigation and education.

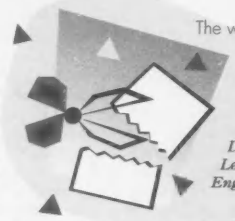
freaky RESUMES

There are several I recall. One was from a person familiar with L-o-t-i-s. Another was from a computer operator who had spent three years training on a system but didn't know what kind. I've also received a resume sent on scented, colored paper.

An MIS supervisor
Owens-Corning Fiberglas Corp.
Amarillo, Texas

Some applicants are wanna-bes but have no clue. I'd say about 20% of our applicants address their resumes to West Minister College. I want to know who the East Minister is. Some claim to work with machines that don't exist. They have just enough information to get it wrong.

Frank Herriott
Director, computer services
Westminster College
Salt Lake City



The weirdest resume I remember getting was one that was cut off on the second page. I never knew what his education or experience was.

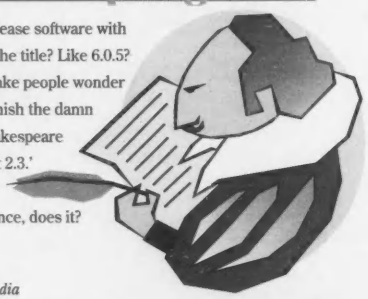
Regis Garbo
Data center director
Lever Brothers
Englewood Cliffs, N.J.

Do you have any resume horror stories? If so, call Lory Dix or Jodie Naze at (800) 343-6474.

WYSIWYG

Work in progress

"Why do we release software with numbers after the title? Like 6.0.5? Doesn't that make people wonder why we can't finish the damn thing? Like Shakespeare writing 'Hamlet 2.3.' It just doesn't inspire confidence, does it?



Stan Cornyn
President
Warner New Media
Burbank, Calif.

Tech Trivia

1. At the 1979 West Coast Computer Faire, the first Apple clone appeared. What was it called?

2. According to John McAffee's book, *Computer Viruses*, which computer was probably the first to be infected by a virus? Was it the Xerox 530, the DEC PDP-11 or the IBM 360?

3. IBM once sold a computer known as the Model 5150. By what name is it more commonly known?

1. The Orange
2. The Xerox 530
3. The IBM PC, introduced in 1981

Polish President Lech Walesa (right) played host to Dell Computer's staff at his office in Warsaw during the launch of Dell Poland in May. Dell Chairman and CEO Michael Dell (left) presented Walesa with a Dell color notebook. (In background, a Walesa aide.)

WYSIWYG Design: Stephanie Faucher

Source: "Newness" newsletter, April 1992. Special thanks to the Computer Museum, Boston.

INSIDE LINES

Red ink watch

▶ With year-end results due out this week, Wang has steadfastly declined to comment on what analysts are calling a precarious financial situation. Wang Class B stock has skittered to an all-time low as Wall Street worries that the company may book a negative net worth of more than $25 million. If so, creditors can call in outstanding loans that Wang may not have enough cash to cover. Some analysts have publicly speculated that Wang may be forced to file for Chapter 11 bankruptcy before the year is out. As of last week, however, Wang had filed no such papers with the local U.S. Bankruptcy Court.

Users 'dis' Wang VS

▶ Wang may say it isn't de-emphasizing the VS line, but the U.S. Society of Wang Users (USSWU) certainly is. Its annual meeting, slated for November in Boston, will feature outsiders such as a Banyan user group, the Boston Computer Society and vendors such as HP, Sun and Microsoft. Steve Jobs is even booked as a keynote speaker. "We're definitely moving away from the Wang name toward more open themes," said Ramsay Miller, chairman of the Americas Pace Special Interest Group, which is an organization of users of Wang's Pace database. USSWU "sees the need for this distance," Miller said.

Malaise strikes Microcom again

▶ Officials at networking company Microcom in Norwood, Mass., last week confirmed a 13% across-the-board layoff that affected 55 employees. The move follows a shareholder meeting last month that indicated a possible top-level management shakeup and/or a shift in product emphasis that will likely be officially announced Aug. 14, a spokesman said. Microcom's stock price plummeted from $7 to $2.50 per share on July 6 — the latest development in its see-saw financial results since 1991.

They can't thank you enough

▶ IBM is getting ready to announce that it has shipped one million copies of OS/2 2.0 since releasing it at the end of March. This amount exceeds what some industry observers expected the company to do for the full year. A spokesman would only say that the company is on its way to the one million mark. One source said to expect IBM to throw a "Thanks a Million" party sometime this month. Meanwhile, a source was invited to join the MS-DOS 6.0 beta-test program. With the beta test just beginning now, the new version should appear next year.

Happy Birthday, Charles

▶ IBM may have a penchant for Tuesday announcements, but CA founder Charles Wang has expressed a liking for always buying a company near the time of his birthday. Not surprisingly, a source in the know says to look for a CA acquisition sometime the middle of this month, probably the 17th or 18th. On the record, CA says it will roll out a new PC software support program for its third-party developers, along with several mainframe-based products set to debut at the Systems Software (user group) Conference in New Orleans Aug. 16-17. Also, CA-Unicenter for Unix software, an integrated system designed to manage HP's HP/UX operating environment, is currently in beta testing and will be shipped by the UnixExpo trade show in New York next month. The product was announced in October 1991.

Everyone's a critic. Industry watchers everywhere all have theories on why Massachusetts' once-rich, once-powerful Route 128 minicomputer monsters are now on the skids. Lumbering reaction to fast-changing market demands combined with a basement-dwelling local economy zapped companies such as DEC, DG, Prime and Wang Labs, they say. But John Cunningham, former president of Wang, says it was status quo thinking in the top ranks that contributed the most to the poor shape these firms are in. "It's sad that the three individuals who birthed the three largest companies here . . . turned out to be the major cause of these companies' declines," he said. What shape is your company in? Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try* Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555.

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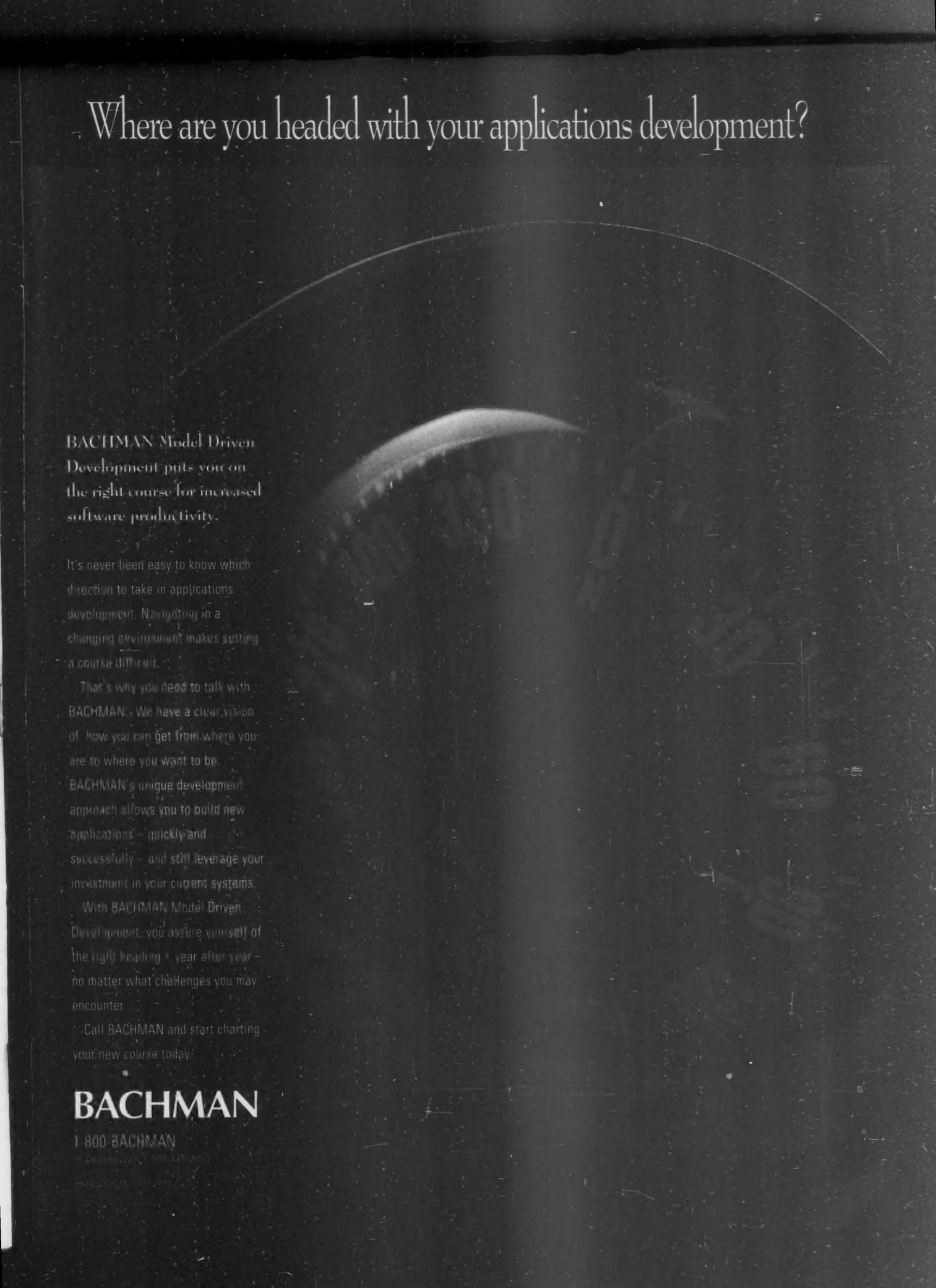

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